Life and Physical Sciences
Texas A&M University
Core Curriculum Cover Sheet
Initial Request for a course to be considered for the Fall 2014 Core Curriculum

1. This request is submitted by (department name): Entomology

2. Course prefix and number: FIVS 123

3. Texas Common Course Number: Click here to enter text.

4. Complete course title: Forensic Investigations

5. Semester credit hours: 3

6. This request is for consideration in the following Foundational Component Area:
   - [ ] Communication
   - [ ] Mathematics
   - [X] Life and Physical Sciences
   - [ ] Language, Philosophy and Culture
   - [ ] Creative Arts
   - [ ] American History
   - [ ] Government/Political Science
   - [ ] Social and Behavioral Sciences
   
   CURRICULUM CORE: No

7. This course should also be considered for International and Cultural Diversity (ICD) designation:
   - [ ] Yes
   - [X] No

8. How frequently will the class be offered? Fall/Spring/Summer Semesters

9. Number of class sections per semester: One

10. Number of students per semester: Limited by only the size of the classroom. Anticipate enrollment cap of 200 students per semester.

11. Historic annual enrollment for the last three years:
    - 0 (New Course)
    - 0 (New Course)
    - 0 (New Course)

This completed form must be attached to a course syllabus that sufficiently and specifically details the appropriate core objectives through multiple lectures, outside activities, assignments, etc. Representative from department submitting request should be in attendance when considered by the Core Curriculum Council.

13. Submitted by:
    - [SIGNED]
    - Kevin W. Heine
    - Course Instructor
    - 29 March 2013

14. Approvals:
    - [SIGNED]
    - David Rapaport
    - Department Head
    - 13 May 2013

15. College Dean/Designee
    - [SIGNED]
    - Kim Dooley
    - May 16, 2013

For additional information regarding core curriculum, visit the Texas Higher Education Coordinating Board website at www.thecb.state.tx.us/corecurriculum2014

See form instructions for submission/approval process.
Texas A&M University
Core Curriculum
Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Foundational Component Area: Life and Physical Sciences

In the box below, describe how this course meets the Foundational Component Area description for Life and Physical Sciences. Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

How does the proposed course specifically address the Foundational Component Area definition above?

Forensic Science and its many applications rely upon collection, processing, analysis and interpretation of physical and biological evidence to explain natural phenomena and the case specific contexts in which debate is posed. The foundation is development and testing of sound hypotheses, experimental design, data collection, analysis, and interpretation in an iterative process of the scientific method. Forensic topics and case studies provide a venue to examine the fundamental processes of science, assess how scientific discoveries explain natural phenomena and observe how findings are adapted for use in explaining occurrences in the physical and human worlds.

Core Objectives

Describe how the proposed course develops the required core objectives below by indicating how each learning objective will be addressed, what specific strategies will be used for each objective and how student learning of each objective will be evaluated.

Critical Thinking (to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information):

Utilizing a series of activities including review of scientific articles, analyses of crime scene scenarios, examination of evidentiary samples, and case file crime scene reports, students will reconstruct incident scenes/scenarios and establish cause and effect relationships. Students will be required to synthesize facts known from scientific testing and crime scene information to critically analyze and interpret results, and create convincing arguments or logical subsequent inquiries, lines of investigation, or bases for disputing and questioning evidence. Students learning will be evaluated by assessing student abilities to culminate qualitative information and quantitative data through examination of an incident scene or scenario, reason logically and analyze the data, and articulate their findings using verbal, written, or illustrative means of communication for which they will receive a grade.

Communication (to include effective development, interpretation and expression of ideas through written, oral and visual communication):

Students will write crime scene reports to include type of evidence taken, data records, and observations on standard crime scene report forms for multiple case examinations, write a scientific paper on glass reconstruction using the scientific method (a 5 part document), perform and record numerous calculations for review (e.g. light wave lengths, blood alcohol content, blood stain geometry), write team reports, and produce power point presentations summarizing probative evidence from crime scene cases. Student learning will be evaluated by assessing student abilities to analyze and interpret data; make determinations based on their analyses, and communicate those determinations using verbal, written, or illustrative presentations and discussion within the context of graded group projects.

Empirical and Quantitative Skills (to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions):
Texas A&M University

Core Curriculum

Initial Request for a Course Addition to the Fall 2014 Core Curriculum

Students will use mathematical equations and spatial measurements to assess light wavelengths, fingerprint analyses, radial fracture analyses, blood alcohol content analyses, and blood spatter analyses. Each case requires data analysis and interpretation with respect to known and observed facts. Student learning will be evaluated through graded exercises that require students to make investigative determinations based on their abilities to properly assess data using cognitive-instrumental reasoning, mathematical calculations, and elementary statistical analyses.

Teamwork (to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal):

There are 4 team assignments (see Core Objective Mapping Attachment) that will require students to take different roles and thus critically assess information and analyses from different points of view. For example, analysis of a crime scene with the team consisting of a Forensic Investigator, Forensic Scientist, and Forensic Reviewer requires each member to view the case and the work of other team members with different perspectives and expectations. Conflicts in interpretations are expected in these assignments and the use of peer review and resolution of disagreements is included as part of written and oral products produced by teams in each assignment. Student learning will be evaluated through graded projects where success relies on the team concept of interdependent roles and effective small group communication and debate.

Please be aware that instructors should be prepared to submit samples/examples of student work as part of the future course recertification process.
Course title and number         FIVS 123 Forensics
Term (e.g., Fall 200X)         Fall 2014
Meeting times and location    MWF
Credit Hours                  3.0

Course Description and Prerequisites

An overview of Forensics that begins at an incident scene and ends with a courtroom verdict. Course topics address the principles, concepts, tools, and methodologies used in the science and practice of forensics. Lectures and exercises include examination of various forensic fields inclusive of the nature and types of evidence collected at incident scenes, the analysis of this evidence and generation of evidence-based conclusions, and the presentation of these findings to a diverse audience (of jurors, judges, etc.)

Prerequisites: none.

Learning Outcomes or Course Objectives

Upon completion of this course, students will be able to:

- Articulate the foundational principles to the forensic sciences and appropriately apply them to an array of field situations,
- Name and comprehend specific methodologies and appropriately apply them to problem solving,
- Collect, organize, and analyze evidence to generate informed conclusions,
- Challenge concepts, dispute evidence, and question conclusions within the context of reaching a group consensus,
- Formulate and present convincing arguments comprehensible by diverse audiences,

Instructor Information

Name                   Kevin M. Heinz
Telephone number       979-862-3407
Email address          kmheinz@tamu.edu
Office hours           TBD
Office location        BCC 108

Textbook and/or Resource Material


Grading Policies

Activities and assignments (9 @ 20 points each) 180 pts
Examination 1                        100 pts
Examination 2                        100 pts
Examination 3                        100 pts
Group Project Part 1                 70 pts
Group Project Part 2                 30 pts
Total Points                         580
Final grades will be based on the percentage of total points earned:

A=90–100%; B=80–89%; C=70–79%; D=60–69%; F=<60%

Course Topics, Calendar of Activities, Major Assignment Dates (Based on Fall 2013 Calendar)

Week 1 (Week of August 25):

Classroom Tasks
- Discuss the field of Forensic Science, the professionals working in the various fields, and the agencies that employ such professionals
- Discuss the Scientific Method and its application in Forensic Science
- Individual Classroom Exercise: Read the case provided, evaluate the information and data, calculate the wavelength used in the examinations, determine the nature of the light used, and conclude the type of evidence examined.

Writing Assignment (Due Week 2)
- Evaluate a scientific journal article and write a paper that includes: (1) a summary of the article, (2) how the Scientific Method is represented in the article, and (3) how the article could be expanded in scope or be of greater value to the forensic community.

Outside Reading Assignment
- Chapter 1: Introduction to Forensic Science
- Chapter 5: Light and Matter

Week 2 (Week of September 1):

Classroom Tasks
- Collect Writing Assignment from week 1
- Discuss separation methods used in laboratories for the analysis of evidence
- Discuss how specific types of microscopes are employed to identify different types of evidence
- Examine the classification system of evidence
- Discuss class and individualizing characteristics

Group Assignment
- The class will be divided into groups; each group will break down into subgroups of Investigators, Forensic Scientists, and Reviewers. Tasks are as follows:
  - Investigators are to read a provided scene scenario and complete an Evidence Submission form for the Crime Laboratory that contains items submitted for analysis.
  - Forensic Scientists are to analyze the submission form and indicate for each item listed: (1) whether the item has class or individualizing characteristics and (2) which forensic tool will be used for analysis.
  - After submission and analysis, Reviewers will evaluate both the scene scenario and the submission form to conclude: (1) whether all evidentiary items were submitted and (2) whether items were properly classified and examined.

Outside Reading Assignment
- Chapter 4: Separating Complex Mixtures
- Chapter 6: Microscopy
- Chapter 3: The Nature of Evidence
Week 3 (Week of September 8):

Classroom Tasks
- Discuss the goal of crime scene investigation
- Examine modes of scene documentation
- Discuss legal aspects of searching and seizing evidence

Outside Reading Assignment
- Chapter 2: Crime Scene Investigation

Week 4 (Week of September 15):

Classroom Tasks
- Examine types of search methods
- Discuss collection and preservation of evidence
- Examine evidence processing methods
- Examination 1

Week 5 (Week of September 22):

Classroom Tasks
- Discuss the development of friction ridge skin
- Examine the methodology used in latent print examination
- Examine documentation and collection methods for impression evidence

Group Assignment
- The class will be divided into groups; each group will break down into subgroups of Latent Print Examiner (LPE) Case Agents and Validation Latent Print Examiners (LPEs). Tasks are as follows:
  o LPE Case Agents will examine and compare unknown and known fingerprints using the ACE-V methodology to determine identifications. Findings will be documented on an LPE Examination form.
  o Validation LPEs will conduct blind, independent examinations on the same unknown and known fingerprints and document findings on an LPE Validation form.
  o After all examinations are complete, each group of LPE Case Agents and Validation LPEs will (1) review all findings, (2) discuss conflicting findings, and (3) resolve conflict to arrive at an agreed upon finding.

Outside Reading Assignment
- Chapter 7: Fingerprints and Other Impressions

Week 6 (Week of September 29):

Classroom Tasks
- Discuss types of questioned documents examinations
- Examine different types of firearms evidence
- Discuss the examination and comparison process of firearms evidence

Outside Reading Assignment
- Chapter 9: Firearms and Toolmarks
Week 7 (Week of October 6):

Classroom Tasks
- Examine the nature of polymer evidence
- Discuss the forensic value of glass
- Individual Classroom Exercise: Read the case provided and reconstruct the glass pieces of a glass pane using an alternate light source. Examine the stress marks of the appropriate radial fracture to conclude the direction of force. (Notes concerning the examination process should be taken to be incorporated into the writing assignment.)

Writing Assignment (Due Week 8)
- Write a paper based on the individual classroom exercise that includes: (1) synopsis of the case, (2) the issue/question being addressed, (3) the materials/tools used in the examination, (4) steps/process applied in the examination, and (5) a conclusion.

Outside Reading Assignment
- Chapter 18: Fibers, Paints, and Other Polymers

Week 8 (Week of October 13):

Classroom Tasks
- Collect Writing Assignment from week 7
- Discuss the application of toxicology in forensics
- Examine the relationship between blood alcohol content (BAC), impaired behavior, and drunk driving laws
- Individual Classroom Exercise: Read the case provided, evaluate the information and data, and calculate the BAC for each person to determine who was legally intoxicated.
- Examination 2

Outside Reading Assignment
- Chapter 17: Forensic Toxicology

Week 9 (Week of October 20):

Classroom Tasks
- Discuss the forensic value of hair
- Discuss the modes of hair analysis
- Discuss the forensic value of biological fluids

Outside Reading Assignment
- Chapter 15: Hair
- Chapter 13: Serology

Week 10 (Week of October 27):

Classroom Tasks
- Discuss blood analysis
- Examine and discuss Bloodstain Pattern Analysis
- Individual Classroom Exercise: Read the case provided and the investigative statement. Use the data provided to calculate (1) the angle of impact of the bloodstains and (2) the area of origin. (Notes concerning the examination process/calculations should be taken to be incorporated into the writing assignment.)
Writing Assignment (Due Week 11)

- Write a paper based on the individual classroom exercise that includes: (1) synopsis of the case, (2) the issue/question being addressed (investigative statement), (3) the data/tools used in the analysis, (4) steps/process applied in the analysis, and (5) the conclusion (whether the investigative question is supported or not supported and why).

Week 11 (Week of November 3):

Classroom Tasks
- Collect Writing Assignment from week 10
- Discuss DNA as forensic evidence
- Discuss death investigation and examine characteristics related to postmortem interval
- Discuss and examine Event Analysis

Group Project Part 1 (Due Week 13)
- The class will be divided into groups. Each group will receive an investigative case file containing: a scene report, supplemental reports, photographs, sketches, medical examiner report, and laboratory reports. Based on the case file information, answer the investigative question by conducting Event Analysis and creating a flow chart reflecting the sequence of the action of the episode. Prepare a case review for submission and class presentation that includes the following: (1) case synopsis, (2) flow chart, and (3) evidence-supported statement answering the investigative question.

Outside Reading Assignment
- Chapter 14: DNA Typing
- Chapter 10: Forensic Pathology

Week 12 (Week of November 10):

Classroom Tasks
- Discuss identification methods used in forensic anthropology and forensic odontology
- Discuss factors affecting the entomological post mortem interval
- Discuss forensic science as it relates to the law and the courtroom

Outside Reading Assignment
- Chapter 11: Anthropology and Odontology
- Chapter 12: Forensic Entomology
- Chapter 21: Forensic Science and the Law

Week 13 (Week of November 17):

Classroom Tasks
- Collect Group Project Part 1 from week 11
- Group presentation of their Group Project Part 1
- Examination 3

Group Project Part 2 (Due Week 16)
- The class will remain in the groups created in Group Project Part 1. Each group will receive a case review file produced by another group as well as the investigative case file used to generate it. Peer review will be conducted on the case review file and a review document generated that evaluates the case review file for the following:
  - Completeness: inclusion of case synopsis, flow chart, response to investigative question
  - Professionalism: neatness, proper grammar and spelling
  - Sound reasoning: conclusion based on information/data provided in the investigative case file
Week 14 (Week of November 24): Thanksgiving Holiday 27 Nov. - No Class Fri 28 Nov.

Week 15 (Week of December 1): Class meets Redefined Day-Monday 1 Dec.; Reading Days 3-4 Dec., No class.

Week 16 (December 8): Group Project Part 2 Due on Final Exam Date/Time to be announced.

Other Pertinent Course Information

Attendance:
The university views class attendance as an individual student responsibility. You are expected to attend class and to complete all assignments. Weekly activities and due dates for individual presentations and written essays are outlined in the syllabus. Your timely completion of all assignments and your participation in weekly class meetings are a key element of the course. Your contributions are important for your own growth as well as that of your classmates. If you request an excused absence you must comply with student attendance rules (see http://student-rules.tamu.edu/rule07) and you are expected to uphold the Aggie Honor Code and Student Conduct Code (see http://student-rules.tamu.edu/rule24). No participation points will be awarded for missed classes, but there no penalty will.

Oral Presentations:
Oral presentation scores will be based on organization, length, grammar, diction and stature, and effectiveness of each presentation. Students should review information provided by the University Writing Center (see http://writingcenter.tamu.edu/c/how-to/communication/) for elements associated with effective speaking.

Written Assignments:
Written assignments will be scored on organization, format, sentence structure, grammar, spelling, and content. Students should review information provided by the University Writing Center (see http://writingcenter.tamu.edu/c/how-to/) for elements associated with effective writing. Except for days covered by excused absences, a penalty of 10% of the maximum points will be assessed for each day an assignment is turned in late.

Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu

"An Aggie does not lie, cheat, or steal, or tolerate those who do."
Texas A&M University
Departmental Request for a New Course
Undergraduate • Graduate • Professional
* Submit original form and attach a course syllabus.*

**Form Instructions**

1. Request submitted by (Department or Program Name): **Entomology**

2. Course prefix, number and complete title of course: **FIVS 123 Forensic Investigations**

3. Catalog course description (not to exceed 50 words): Overview of Forensics from incident scene to courtroom verdict; principles, concepts, tools, and methodologies used in the science and practice of forensics; examination of various forensic fields; evidence recognition, analysis, interpretation, and presentation to diverse audiences.

4. Prerequisite(s): **None**
   Cross-listed with: **None**
   Stacked with: **None**
   Crosslisted courses require the signature of both department heads.

5. Is this a variable credit course? **No**
   If yes, from _______ to _______

6. Is this a repeatable course? **No**
   If yes, this course may be taken _____ times.
   Will this course be repeated within the same semester? **No**

7. This course will be:
   a. required for students enrolled in the following degree program(s) (e.g., B.A. in history)
   None
   b. an elective for students enrolled in the following degree program(s) (e.g., M.S., Ph.D. in geography)
   Undergraduates in any degree program across all colleges may find this course of interest and application to their academic program.

8. If other departments are teaching or are responsible for related subject matter, the course must be coordinated with these departments. Attach approval letters.

9. **FIVS 123 Forensic Investigations**

<table>
<thead>
<tr>
<th>Lect</th>
<th>Lab</th>
<th>SCH</th>
<th>CRP and Fund Code</th>
<th>Admin. Unit</th>
<th>Acad. Year</th>
<th>Free Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>00</td>
<td>000</td>
<td>00</td>
</tr>
</tbody>
</table>

Approval recommended by:

Dr. David Ragland, Head, Entomology
Department Head or Program Chair (Type Name & Sign) Date
Chair, College Review Committee Date

Department Head or Program Chair (Type Name & Sign) Date
(if cross-listed course)
Dean of College Date

Submitted to Coordinating Board by:

Chair, GC or UCC Date

Associate Director, Curricular Services

Questions regarding this form should be directed to Sandra Williams at 845-8201 or sandra.williams@tamu.edu.
Curricular Services – 3/10

[Stamp: Received APR 24 2013]