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New forensic courses separate fact from fiction

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New forensic courses separate fact from fiction

**As shows like *CSI* capture the public's imagination,
IWU students learn the hard science behind a rising field.**

By REBECCA WELZENBACH '07

In solving mock crimes, students in "Human Heredity and Forensic Biology" learn how to make sense of "trace evidence" such as paint chips, dirt, fibers from clothing or paper, and hairs. Above, Kevin Latman '06 (left) and Joe Broucek '07 (right) watch as Francesca Catalano, visiting assistant professor of biology, searches for clues.

Third-year student Joe Broucek carefully peeled open an envelope, "Exhibit B," containing valuable evidence regarding the recent kidnapping of a dog belonging to Given Harper, professor and chair of biology at Illinois Wesleyan.

Noticing a hair caught in the envelope's seal, Broucek removed the remnant, setting it aside for further examination. If the root was still attached to the strand, DNA tests could reveal the owner of the hair — and possibly the perpetrator of the crime.

Although it sounds like an episode of CBS's popular TV show, *CSI: Crime Scene Investigation*, this exercise actually constituted part of the final examination for a new course taught at IWU in the fall of 2005: "Human Heredity and Forensic Biology."

Rather than giving a standard written final exam, Francesca Catalano, visiting assistant professor of biology, who taught the course, says she devised a practical final "using faculty volunteers as 'criminals' and 'victims.'" By examining evidence purportedly found at the site of the mock dog-napping, students demonstrated their ability to analyze "blood" spatters, match the fingerprints of the unknown guilty party to those of a known suspect, and explain how to make sense of "trace evidence" such as paint chips, dirt, fibers from clothing or paper, and hairs like the one Broucek found attached to the envelope.

Another aspect of the exam required the students to re-sketch a poorly drawn crime scene, creating a scale to ensure accurate and proportionate representation of the area.

Catalano designed the introductory-level course with the interests and abilities of non-science majors in mind, intending to provide students with a general background in biology as well as basics of legal theory and criminal justice. Over the course of the semester, she expanded and adapted the curriculum to include ballistics, arson investigation, and handwriting analysis. "It's

great to offer interdisciplinary courses to students at this university," says Catalano, who earned both a doctorate of jurisprudence from DePaul University and a doctorate in microbiology from Loyola University.

The subject matter is truly relevant across departments: Martin Nickles, adjunct professor of anthropology, also taught a forensic course this fall. It was the third time IWU's anthropology department had offered such a class since the idea was introduced in 2002. Additionally, this May Term, Christian Ray, visiting assistant professor of chemistry, will teach a 100-level forensic chemistry course.

Currently, Catalano and Charles Springwood, associate professor of anthropology, are collaborating in order to solidify the similarities and distinctions of forensic study between the two departments. According to Springwood, forensic anthropology differs from forensic biology in that it is often applied in the identification of corpses. "Forensic anthropologists were brought in after the tsunami to identify bodies," Springwood says. "They are especially good at identifying dental remains or just partial skeletons — a pelvis or a jaw bone, for example."

While the anthropology students made a field trip to the county coroner's office this fall, Catalano's biology class observed professional forensic scientists at a crime laboratory in Morton, Ill. According to Catalano, at the lab, students saw a wide variety of applications of forensic science, "from ballistics to DNA to chemistry techniques."

Illinois Wesleyan has a long and successful history with forensic science courses. In 1985, Forrest Frank, former associate professor of chemistry, introduced a popular course titled "Chemistry and Crime." In 1989, a sabbatical took Frank to London, where he applied his knowledge of forensic chemistry to the Serious Crimes Unit at Scotland Yard. The course resumed upon Frank's return to IWU and he continued to teach it even after his retirement in 1999.

In the last five years, the field of forensic science has been growing faster than ever before. The Bureau of Labor Statistics has projected a 13 percent increase in forensic technicians entering the workforce from 2000 to 2010.

IWU is not the only university increasing opportunities in forensic science in order to keep up with the trend. However, many other universities only offer exposure to criminology and genetics in narrowly focused, upper-level classes. Catalano's approach to the subject — presenting it as an introductory, interdisciplinary course — is unusual among universities of Illinois Wesleyan's size, and consistent with the institution's mission to provide unique educational opportunities through distinctive curricula.

In fact, Catalano worked with publishers to build her own textbook, a compilation of relevant and level-appropriate chapters from a variety of texts, because she was unable to find a biology textbook appropriate for the style of class she wanted to teach.

One explanation for the forensic boom is simply that of a changing world. Springwood pointed out that "with all the wars and national disasters in recent years, forensic anthropologists,

unfortunately, have had a lot of work to do," and constant technological improvements make that work both possible and increasingly reliable.

Another important catalyst behind the increased interest in forensics, especially among young undergraduates, is likely TV shows such as *CSI* (and its spin-offs, *CSI: Miami* and *CSI: New York*) as well as A&E's *Cold Case Files* and Court TV's *Forensic Files.* Springwood added that this year's forensic anthropology students were assigned to watch *Bones*, a new drama on the Fox network, which is inspired by the life of forensic anthropologist Kathy Reichs. In class, the students and professor critiqued the methods used in each episode.

According to Catalano, TV shows do not accurately portray the way forensic science is used to solve crimes. She says that the popular programs, which glamorize work that is often difficult and tedious, have attracted students lacking a sufficient science background to the forensic field. "What I wanted to do with this class was to provide students with a foundation in biology, with molecular and population genetics [the study of how frequently certain genetic variations occur within a given population], and delve into some of the issues that are important and interesting for that kind of work," Catalano says of her desire to resolve the conflict between exciting fiction and complex reality.

Broucek admits that he "didn't know what forensic science really was before [he] took the class." Hair by hair, though, students are catching on.

"Look at all the hot topics that were issues of the presidential election. They were all issues of science: evolution, stem cell research, even abortion to a certain extent," Catalano explains. "If students understand what we do in this class, then they can use that as a foundation to understand other pressing issues."