Botany 575: Principles and applications of forensic botany
3 credits

Course schedule: Lecture T,R 1:20-2:10pm, 245 Birge Hall, Lab W 1:20-3:15pm Birge 245

Prerequisites: Botany 130 or Biology/Zoology/Botany 151 and 152, or Biocore 381 and 383, or concurrent registration in Botany 299 (one credit) for directed independent study of underlying botany

Course offered by:
Alex C. Wiedenhoeft and Sara Hotchkiss (Professor of Record)

Course format: Classroom lecture/discussion, with possible occasional campus wanderings or sojourns (e.g. Center for Wood Anatomy Research, field phytopsy of a campus tree if one is felled, etc) and weekly lab. Students will have assigned work outside the classroom including readings, videos, and projects.

Executive Summary of Class: A fast and broad overview of forensic science, focusing on forensic botany with primary emphasis on methods other than DNA analysis. Students will be expected to read case studies and other works from the forensic literature, to tolerate exposure to primary research literature that underpins forensic applications, and to explicitly articulate the botanical details subtending the techniques discussed. The primary emphasis of the course is the way in which forensic science broadly, forensic biology in general, and forensic botany in particular integrates results of basic science in a societally and scientifically relevant way.

Student Proficiency Evaluation: Lecture-related assessments - 60% of total grade: mid-term take-home exams and final lecture exam 15% each, student presentation/project 15%. Lab assessments - 40% of grade: 10% for each lab exam, 10% attendance and participation. Students with prior forensic biological expertise are encouraged to present their own work, but supporting documentation is required. Format of student presentation/project is negotiable (a paper, a video, some other clever way to deliver content efficiently).

Expected Student Outcomes: Understand the critical role of basic botanical science for a range of forensic botanical methods and how this science can influence society; be able to articulate ways in which underlying biological variability and similarity can be exploited in a forensic context; be capable of reading and understanding primary literature (case studies) in forensic botany; achieve an awareness of the primary literature in basic science that serves as the foundation for forensic literature and field application.

Expectations for Student Conduct: Any work turned in will accurately reflect authorship and intellectual property. You are expected to attend class – please let me know in advance if you will be absent. Please silence your mobile phones and hold conversations outside the classroom. Participate in the discussions. I am going to ask for your feedback, about your interests, what you think you want from this course. It will be more fun for all of us if you participate.

Provisional Course Syllabus

Day of week	Date	Topic
Tuesday	23-Jan-18	Course introduction, expectations, evaluations; general introduction to botanical forensics *sensu lato*
Wednesday	*24-Jan-18*	*Lab safety; basic lab equipment; expectations and grading; sample preparation*
Thursday	25-Jan-18	The state of US forensic science; forensic and botanical principles underlying valid inference
Tuesday	30-Jan-18	Civil vs. criminal forensic botany
Wednesday	*31-Jan-18*	*Trace evidence scavenger hunt; interpreting evidence; documenting evidence*
Thursday	1-Feb-18	Science influencing policy and law; forensic-like inquiry in science
Tuesday	6-Feb-18	Review of the plant body as a source for physical evidence; other types of botanical evidence
Wednesday	*7-Feb-18*	*Survey of the higher plant body part I*
Thursday	8-Feb-18	Flowers, fruits, seeds, and pollen as types of evidence
Tuesday	13-Feb-18	Plant taxonomy and identification; primacy of the context of a forensic question
Wednesday	*14-Feb-18*	*Survey of the higher plant body part II*
Thursday	15-Feb-18	Forensic mycology - spores, fruiting bodies, botanical decomposition, site conditions, commercial concerns
Tuesday	20-Feb-18	Review session/flex lecture/special topics/site visit.
Wednesday	*21-Feb-18*	***Lab exam***
Thursday	22-Feb-18	Forensic palynology. **Distribute take-home exam.**
Tuesday	27-Feb-18	DNA methods in plant identification, part I. **Take-home exam due.**
Wednesday	*28-Feb-18*	*Pollen training*
Thursday	1-Mar-18	DNA methods in plant identification, part II
Tuesday	6-Mar-18	Constraints on DNA plant identification
Wednesday	*7-Mar-18*	*Pollen practice*
Thursday	8-Mar-18	On the nature of digital images and digital imaging
Tuesday	13-Mar-18	Guilt, innocence, conviction / evidence, analysis, testimony : Innocence project
Wednesday	*14-Mar-18*	*Pollen evaluation*
Thursday	15-Mar-18	Plant populations, biogeography, and population assignment, and human factors influencing plant range
Tuesday	20-Mar-18	Plant physiology and growth in forensic botany (gravesite analysis, time of deposition, geomorphology, etc)
Wednesday	*21-Mar-18*	***Lab exam***
Thursday	22-Mar-18	**Student presentations**
Tuesday	27-Mar-18	**Spring recess**
Wednesday	28-Mar-18	**Spring recess**
Thursday	29-Mar-18	**Spring recess**
Tuesday	3-Apr-18	Review session/flex lecture/special topics/site visit. **Distribute take-home exam.**
Wednesday	*4-Apr-18*	*CWAR site visit*
Thursday	5-Apr-18	Plants as poisons
Tuesday	10-Apr-18	Illegal logging and endangered tree species harvested for timber. **Take-home exam due.**
Wednesday	*11-Apr-18*	*Wood training*
Thursday	12-Apr-18	Forensic wood science part I
Tuesday	17-Apr-18	Forensic wood science part II
Wednesday	*18-Apr-18*	*Wood practice*
Thursday	19-Apr-18	Forensic phycology and lichenology - drowning, trace evidence, time of deposition
Tuesday	24-Apr-18	Plant ecology in forensic botany (gravesite analysis, time of deposition, geomorphology, etc)
Wednesday	*25-Apr-18*	*Wood evaluation*
Thursday	26-Apr-18	Careers in forensic biology
Tuesday	1-May-18	**Student presentations**
Wednesday	*2-May-18*	*Wood evaluation*
Thursday	3-May-18	Review session and course wrap-up