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## Law and Neuroscience

University of Minnesota Law School LAW 6063 Fall 2019

> Professor Francis X. Shen Professor Robert R. Hopper

Tuesdays, 1:25 – 3:25 pm Location: Mondale Hall, Room 475

#### Administrative Memo & Syllabus

What are adolescents, psychopaths, and white-collar fraud artists thinking? Why does emotional trauma for victims of abuse last so long? Why is eye-witness memory so poor? Do violent video games lead to violent children? How can you get into the heads of the judge and jury? Lawyers and courts, including the U.S. Supreme Court, are already integrating neuroscience research into their arguments and opinions on questions such as these. This Law and Neuroscience course will introduce the exciting new field of "neurolaw" by covering issues such as the neuroscience of criminal culpability, brain-based lie detection, cognitive enhancement, emotions, decision making, and much more. Along the way we'll discuss how the legal system can and should respond to new insights on topics such as adolescent brain development, addiction, psychopathy, Alzheimer's, the effects of combat on soldiers' brains, and concussions from sports injuries. An emphasis will be placed on "Bridge to Practice", exploring the use of neuroscientific evidence in real legal practice. (Note that all scientific material in the class will be presented in an accessible manner, so no previous science background is required.)

Instructors:	Dr. Francis X. Shen, JD, PhD 330 Mondale Hall
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	Atty. Robert R. Hopper
	Robert R. Hopper & Associates, L.L.C.
	333 S 7th St #2450, Minneapolis, MN 55402
	Robert.Hopper@robertrhopper.com, 612-455-2199
Shen Office Hours:	Thursdays, 11:00 am - 12:15 pm; 1:15-2:00 pm (and by appointment)
Required Text:	OWEN D. JONES, JEFFREY D. SCHALL & FRANCIS X. SHEN, <i>LAW AND</i> <i>NEUROSCIENCE: CASES AND MATERIALS ON NEUROLAW</i> (2014, Aspen Publishers).

On Reserve:	MICHAEL S. GAZZANIGA, ET. AL. COGNITIVE NEUROSCIENCE: THE BIOLOGY OF THE MIND (2009)	
	JAMIE WARD, THE STUDENT'S GUIDE TO COGNITIVE NEUROSCIENCE (2010) Online: <u>http://www.psypress.com/ward/</u>	
	EUGENE VOLOKH, ACADEMIC LEGAL WRITING (2010)	
	Ross Guberman, Point Made (2011)	
Casebook materials web site:		
	http://www.vanderbilt.edu/lawbrain [user name and password printed in the coursebook]	
Grading:	See Section VI below. No pass/fail for law students; pass/fail is allowed for graduate level non-law students with instructor permission. <i>Note that there are separate tracks for law and non-law students</i> as described below. Non-law students will complete a final writing assignment appropriate for their home discipline.	
Canvas:	All readings will be posted on Canvas, the University's learning management system. You are expected to check Canvas regularly for any class or assignment updates.	
Writing Requirement:	This course fulfills the Upper Division Writing Requirement and each student must produce a work (or works) of at least 5,000 words (excluding bibliography and table of contents).	

### I. Law and Neuroscience <sup>1</sup>

Brain science has become a part of our lives. Parents make decisions about altering their child's brain chemistry through drug treatments for attention deficit disorder. Children grapple with the aging brains of their parents when cases of Alzheimer's and dementia arise. Schools and coaches think about the impact of brain trauma on the sports field, and the military thinks about the impact of combat on the brains of soldiers. Billions of research dollars are spent to better understand addiction, control impulsive behavior, and improve cognitive performance.

The legal system too is starting to see more brain science in its midst. The integration of neuroscience and law ("neurolaw") is a hot topic in legal and neuroscientific circles. In the popular press, the *New York Times Magazine* has run a cover story on neuroscience and law; "neuroscience in court" was named – by the preeminent scientific journal *Science* – as one of the top seven topics to watch in 2008; and the MacArthur Foundation has invested nearly \$15,000,000 to support a *Research Network on Law and Neuroscience*. In the courtroom, although the absolute number of neurolaw cases remains small, the data suggest we are in a period of exponential growth.

The future of law and neuroscience remains unknown, and at present the field is just in its infancy. As you'll see from this syllabus, law and neuroscience has the potential to encompass many things. Most importantly for you, neurolaw is an interdisciplinary area of inquiry that is still uncharted territory – ripe for exploration by young, intrepid legal and scientific minds!

### **II.** Course Aims and Objectives

*Aims.* This course has several interrelated aims: (1) to introduce you to the most important questions emerging from the intersection of law and neuroscience; (2) to foster interdisciplinary dialogue between the legal, psychology, and neuroscience communities; (3) to enable law students to harness brain research to become better practicing attorneys; and (4) to encourage non-law students to see the legal implications of neuroscience research. Law students completing this class will be exposed to path-breaking scientific research, learn how that research may (or may not) be applicable to legal questions, and learn more about how your own brain works (and can work better) as a legal actor. Graduate students completing this class will be introduced to a variety of ways in which the legal and policy system operates; be exposed to a many legal and policy implications of neuroscience research; and learn about how future neuroscience research may further improve law and public policy.

Specific Learning Objectives. By the end of this class, students will:

• Gain exposure to the many ways in which neuroscience research is being deployed in legal contexts such as criminal proceedings, civil litigation, state and federal legislation, regulatory oversight, and policy evaluation.

<sup>&</sup>lt;sup>1</sup> A note on terminology: "Neuroscience", as we are using the term, is analogous to "brain sciences" or "study of the brain". The term neuroscience derives from the word "neuron" – which is the special type of cell that our brains rely on to function. The phrases "Law and Neuroscience", "Neuroscience and Law", "Law and the Brain" and "Neurolaw" will be used interchangeably to refer to the application of neuroscience findings to law (broadly defined).

- Think critically about whether, and under what conditions, neuroscientific evidence should be admitted in courtroom proceedings.
- *(For law students)* Learn a set of legally relevant "brain basics" how the brain works, how researchers study it, and different types of brain measurement and monitoring devices.
- *(For law students)*Learn what questions to ask, and what further resources to consult, if and when you are confronted with neuroscience evidence in your practice.
- *(For law students)* Develop a better understanding of how and why legal actors (including you) act and think, thereby allowing for refinement in your legal advocacy skills.
- *(For students outside the law school)* Learn a set of scientifically relevant law basics how laws are made and enforced; how the U.S. legal system operates; and how scientific evidence is (or is not) used in lawmaking and legal adjudication.
- *(For students outside the law school)* Develop a better understanding of how neuroscience research might be designed in order to improve law and policy.

## **III. Seminar Format and Procedures**

This is a two-credit seminar offered in the Law School. The seminar will meet for 2 hours once a week over the course of the 13-week semester. Each class session will involve a mix of lecture and discussion, all focusing on the week's reading material. Additional contextualizing background on the relevant science will also be provided via lecture.

## <u>There are two tracks to this course: one for law students and one for all students</u> who are not enrolled in the law school.

One of the primary goals of this class is to foster interdisciplinary dialogue between law and neuroscience. In order to do that, law students must be willing to learn about the brain and psychology / neuroscience students must be willing to learn about the law. Neither task is easy, but we'll devote sufficient time in and outside of class to facilitate this learning.

**For law students:** It is important to emphasize that, while those with some background in the natural or social sciences may find some of the concepts more familiar, no science background is required for this class. For those students who have not cracked open a science book since high school, or those who label themselves as "not a science person" you may still find the class valuable. Indeed, you may find that learning about basic brain science (in this legally meaningful context) isn't quite as hard as you imagine it to be, and that the knowledge you learn here may be applicable to many spheres of your life outside of the law.

For those law students who do have a science background, you will have many opportunities to navigate the class in a manner that is consistent with your scientific literacy. For instance, there are many opportunities for further reading and for engaging with the basic science material in deep ways. In sum, regardless of your scientific background, I am confident that you can find many meaningful ways to engage with the class material.

**For students outside the law school:** Just as the law students may at first be bewildered by the brain, so you may find yourself lost in the language of law. No legal background is

required, and I will be available both in and outside of class to get you up to speed on the legal basics you need to know.

**For undergraduates:** Recognizing that the depth of your academic training is not that of a graduate student, your track will involve the same primary writing requirements, but will be assessed commensurate with expectations for undergraduate students.

**For all students:** Just as the field of neurolaw relies on contributions from, and dialogue between, both law and science, so too will the success of this course rest upon your collective willingness to engage with one another. The course is structured to create incentives for genuine interdisciplinary exchange.

While the final writing assignment will comprise the vast majority of your grade, you will also be submitting short, written reactions on Canvas for each class, and making an oral presentation on an assigned day. Additional information on the oral presentation is provided at the end of this syllabus, and more guidance, as well as the topics, will be provided in class.

## **IV. Bridge to Practice**

The use of neuroscientific evidence in legal settings requires the legal tools of written and oral advocacy. Attorneys who wish to proffer neuroscientific evidence, and those attorneys who wish to challenge its admission, must argue in both written and oral form in front of a judge. Thus, the basic legal skills of oral and written advocacy can be developed by a focus on neurolaw.

To facilitate this skill development, we have transformed the course from a theoretical inquiry to a "Bridge to Practice" exercise. With the aid of accomplished trial attorney Robert Hopper, co-instructor for the course, students will be composing written legal materials (briefs, memoranda, and so forth) as they would in legal practice. Students will also have an opportunity to argue in a mock courtroom setting, and will receive feedback on their oral advocacy. Students will work with Professor Shen and Attorney Hopper to select an appropriate topic for the brief. Additional details on the Bridge to Practice emphasis will be provided in class.

### V. Class Requirements

*1. Class attendance policy:* Class attendance and active participation both in class and through ecommunication, is required. You are expected to attend class regularly, complete all of the assignments noted below, and be an active member of the class during discussion periods. Attendance will be taken each session.

2. *Class readings:* Except as otherwise noted, all class readings will be derived from OWEN D. JONES, JEFFREY D. SCHALL & FRANCIS X. SHEN, *LAW AND NEUROSCIENCE* (2014, Aspen Publishers).

Additional electronic materials are available on the book web site: <u>http://www.vanderbilt.edu/lawbrain</u>. A login and password are provided for you in the book.

*3a. Assignments for <u>Law Students</u>*. Law students must complete the following assignments in order to pass the class:

- Submission, for each class, of a short (one paragraph) reaction post related to the readings for the week.
- Submission of an outline of the memorandum or brief (minimum 2 pages).
- Completion of a memorandum or brief of at least 5,000 words. The final, written product will be due by 4:30 pm on the last day of the Law School exam period.
- Completion of short oral presentation related to the written work product.

*3b. Assignments for Non-Law Students*. Non-law student must complete the following assignments in order to pass the class:

- Submission, for each class, of a short (one paragraph) reaction post related to the readings for the week.
- Submission of an outline of the research proposal / paper or expert memorandum (minimum 2 pages).
- Completion of final written product at least 5,000 words. The final, written product will be due by 4:30 pm on the last day of the Law School exam period.

*For all students:* you will be composing a final paper / brief / grant proposal pages (double spaced). By approximately midway through the semester (adjustable depending on individual circumstances) you will be required to submit a short outline for your paper/brief, which should be in your field of study. Many more details about the final written product and be provided in seminar.

# VI. Grading

Basis for Grades. Grading will be comprised of the following components:

- 15%: Class participation (including the submission of the weekly Canvas posts)
- 5%: Preparation and presentation of the oral presentation.
- 80%: Final Written Work Product

*Class Participation (15%).* This is a class in which active participation with classmates and meaningful engagement with class materials is expected. Class participation includes timely submission of the course web site posting; regular attendance, thorough preparation of reading and written assignments; scholarly, and constructive critique of readings; adherence to the cell phone and laptop policies discussed below; and avoidance of unexcused absences.

*Oral Presentation (5%)*. Each law student will be required to deliver a short oral argument based on the research work. Students will make the presentation on an assigned day in the second half of the semester.

*Final Written Product (80%).* We will discuss the details of the final work product in detail in the seminar. Please note that deadlines are taken very seriously. Late submissions yield grade reductions, in keeping with law school policy.

### Cell Phones, Smart Phones, and Laptops

Our time together each week will be cell phone and smart phone free. When you walk into the room, you are expected to silence your phones. Exceptions will be made only in exceptional circumstances (which you should discuss with me before class). Law school policy prohibits unauthorized use of laptops during class. You are expected to refrain from any computer use that is not germane to the class. Violation of the laptop use policy will result in a reduced class participation grade.

### **VII. Academic Integrity**

You are expected to abide by the Law School Academic Rules, which require regular attendance and adequate preparation, and to satisfy the <u>University's Teaching and Learning</u> <u>Student Responsibilities</u>, which note student responsibility for attending class, for meeting all course requirements, observing all deadlines and course procedures, maintaining academic integrity, seeking academic help and accommodation as warranted, respecting intellectual property, and keeping the classroom in good order.

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University you are expected adhere to the Board of Regents Policy: Student Conduct Code. Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

The Law School's Academic Rules can be found at: http://www.law.umn.edu/current/policies.html

The University's Code of Student Conduct can be found at: <u>https://oscai.umn.edu/</u>

You are encouraged to study together and to discuss information and concepts covered in class. With the exception of any clearly noted collaborative tasks, this permissible cooperation should never involve a student submitting as her/his own work as the work of another. If at any time you have questions about the right way to proceed, simply ask.

### VIII. Disability Accommodations & Mental Health

Students with disabilities should consult with the University's Office of Disability Services (612-626-1333) and the Law School's Assistant Dean of Students Office regarding any necessary classroom or exam-related accommodations. The University is committed to providing quality education to all students regardless of ability. Determining appropriate disability accommodations is a collaborative process. You as a student must register with Disability Services and provide documentation of your disability. The course instructor must provide information regarding a course's content, methods, and essential components. The combination of this information will be used by Disability Services to determine appropriate accommodations for a particular student in a particular course. For more information, please reference Disability Services: <u>http://ds.umn.edu/student-services.html</u>

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <u>http://www.mentalhealth.umn.edu</u>

### **VIII. Professionalism**

All students are expected to comply at all times with the Law School's <u>Honor Code</u> and the University's <u>Student Conduct Code</u>. You should conduct yourself in this class and throughout your Law School career in accordance with the principles of professionalism applicable to practicing attorneys, the profession to which you aspire. The Hennepin County Bar Association Lawyers' Pledge of Professionalism says lawyers should encourage respect for the law and our legal system through their words and actions and be courteous to everyone during the course of their work. The Minnesota Supreme Court and MSBA Professionalism Aspirations say that "a lawyer's conduct should be characterized at all times by personal courtesy and professional integrity in the fullest sense of those terms" and "lawyers and judges owe each other respect, diligence, punctuality, and protection against unjust and improper criticism and attack." I expect the same behavior in your interactions with me and other faculty, with your fellow students, and with Law School staff.

## IX. Class Schedule and Reading Assignments

*NOTE:* The guest speaker / field trip dates are still being finalized, and thus the detailed class schedule is still under development. An updated class schedule will be circulated before the start of the semester.

Note: All "Chapter" references refer to chapters in LAW AND NEUROSCIENCE (2014).

# The Basics of Law and Neuroscience:

## 1. Sept 3: Introduction

- a. Chapter 1
- 2. Sept 10: What's going on in there? Brain Structure, Brain Function, and Brain Death
  - a. Chapters 7, 8, and 10
  - b. Special guest: Dr. Adam Steiner, PhD, University of Minnesota, Mankato
  - c. In the first half of class, we'll discuss Brain Basics. In the 2<sup>nd</sup> half of class, we will touch on topics related to Brain Death. Our guest for the session will be Dr. Adam Steiner (Minn. State Mankato). You will have an opportunity to see and touch a (dead) human brain.

## 3. Sept 17: fMRI Field Trip

- a. Field Trip! Today we will take a tour of the University's fMRI facilities. Class will be held at the <u>University of Minnesota Center for Magnetic Resonance</u> <u>Research</u>, 2021 Sixth Street SE. Additional details to be provided.
- b. Background reading: Review chapters 7 and 8, and read chapter 9.

# Applied, Actionable Neuroscience:

## 4. Sept 24: Neuroscience in the Courtroom

- a. Chapters 2 and 6
- b. Additional reading/viewing may be assigned

# 5. Oct 1: Neuroscience in the Courtroom (continued, Atty. Hopper cases)

6. Oct 8: The Adolescent Brain and Juvenile Justice

## 7. Oct 15: Mental States

a. Special Guest: <u>Dr. Iris Vilares, PhD</u>; Assistant Professor, Department of Psychology

## 8. Oct 22: Responsibility and Addiction

9. Oct 29: Deep Brain Stimulation and Neuroethics
a. Special guest: Dr. Alik Widge, MD, PhD, UMN Dept of Psychiatry

## **10. Nov 5: Cognitive Enhancement and Trans-Humanism**

### 11. Nov 12: Working with Neuroscience Experts in the Courtroom

a. Special Guest: Dr. Norman Cohen, Clinical Neuropsychologist

## 12. Nov 19: Trauma

- a. Special Guest: Dr. Brian Engdahl, PhD, University of Minnesota
- 13. Nov 26: FINAL CLASS

## *To be scheduled:*

Dr. Chinmoy Gulrajani, Director, Forensic Psychiatry Fellowship at the University of Minnesota Medical School

Merav Silverman, UMN Institute of Child Development

- Invite Uzma as well, aim for one of the available dates
  - On her technology and its legal implications
    - First objective measure of concussion + FDA approval
  - Randy will also do part of this class
- \*\* schedule the oral arguments
- \*\* Randy will lecture on the Peter Berge case as well, on incapacity to testify