UNIVERSITY OF TENNESSEE
COLLEGE OF SOCIAL WORK
SW607 Neuroscience for Clinical Practice
3 credit hours
Fall, 2015

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Code of Conduct
It is the student’s responsibility to have read the College of Social Work Ethical Academic and Professional Conduct Code that is in the College of Social Work Ph.D. Student Handbook (www.csw.utk.edu).

The Honor Statement
An essential feature of the University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.

University Civility Statement
Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other’s well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus (http://civility.utk.edu/)

Disability Services
For course adaptations or accommodations because of a documented disability or to share emergency information, contact The University of Tennessee Office of Disability Services at 2227 Dunford Hall (865) 974-6087 to ensure that you are properly registered for services.

Dimensions of Diversity
The College of Social Work and the University of Tennessee welcome and honor all people. In accordance with the U.S. Council on Social Work Education and the U.S. National Association of Social Workers, the College of Social Work defines “the dimensions of diversity as the intersectionality of multiple factors, including” age, class, color, culture, mental or physical disability, ethnicity, gender, gender expression, gender identity, immigration status, marital status, national origin, political ideology, race, religion, sex, and sexual orientation. The College values intellectual curiosity, pursuit of knowledge, and academic freedom and integrity. A person’s diverse life experiences may include oppression, poverty, marginalization, and alienation as well as privilege, power, and acclaim. The College of Social Work promotes social
justice and social change, and strives to end discrimination, oppression, poverty, and other forms of social injustice.

**Information Literacy/Technological Resources**
This course will be conducted online using Blackboard. Students must have a working knowledge of all aspects of Blackboard, particularly accessing assignments and learning resources, viewing PowerPoint presentations, submission of assignments, utilizing blackboard for group work and group presentations, and communication with the instructor and students.

In addition, students should have a working knowledge of various social media (YouTube, Facebook, iTunes, etc.) and be able to incorporate these into the learning experience. This will be covered in greater detail in the first session of the course and on Blackboard.

**COURSE DESCRIPTION**

Neuroscience for clinical practice provides a neuroscience framework for understanding lifespan development, trauma, addictions and other mental health disorders, psychotropic medications, and attachment. Neurophysiologic development provides a foundation for understanding the processes of human development and how these processes are influenced by culture and the environment. This course examines on the social brain, with a special emphasis on those parts of the brain that mediate attachment and the emotions. This course reviews genetics and gene-environment interactions, neurophysiological development across the lifespan, the effects of stress and trauma on the brain, and assessment of neurophysiological processes.

**COURSE RATIONALE**

To practice accountably and effectively, social workers must be able to understand their clients and their presenting issues within their clients’ developmental contexts. In supportive environments, individuals flourish as they progress through developmental stages and stage-salient tasks. Other environments, because of risk factors associated with them, are less supportive of wellbeing. Even so, brain plasticity provides humans with an amazing capacity to adapt to these less supportive and sometimes frankly maladaptive environments, although sometimes at great cost to themselves. Especially for young children, the costs to the developing brain of less adaptive environments are profound because their brains actually become organized around repeated experiences within these less adaptive environments. Also, genetics play a role in terms of gene expression and potential as well as gene-environment interactions in regards to these less adaptive environments. Neurophysiological changes and behaviors resulting from these earlier less adaptive environments are often conceptualized by clinicians as psychopathology or presenting problems of clients. Understanding human development as a series of processes mediated by the brain within an environment-dependent context profoundly reframes not only our understanding of our clients and their presenting problems, but also how to intervene appropriately with clients and their environments. This different understanding of human development also suggests the critical importance of effective prevention programs and social policies that promote wellbeing, as well as interventions directed at changing the larger environments of individuals. Thus, knowledge gained in this course will allow clinical social workers not only to better understand, contextualize, and assess clients and their presenting problems, but also to develop more appropriate interventions, prevention programs, or policies for working with or for the benefit of clients and for the necessary environments to support human wellbeing.
COURSE COMPETENCIES

Students will demonstrate understanding of fundamental principles of brain development and neurophysiological functioning, including:

1. Fundamental principles of brain development and neurophysiological functioning.
2. An applied understanding of the role of neurophysiology in psychosocial functioning.
3. Assessment resources for evaluation of neurophysiological factors in clinical presentation and psychosocial functioning.

STUDENT LEARNING OBJECTIVES

Students will be able to:

i. Identify, discuss and give examples of social neurophysiological dysfunction and disorders.
ii. Analyze social neurophysiological development and functioning in clients.
iii. Recommend appropriate methods of assessment for different social neurophysiological dysfunction and disorders.
iv. Determine probable precursors of client social neurophysiological dysfunction.
v. Propose a plan of treatment based upon principles of neurophysiology.

ELECTRONIC CLASSROOM POLICY

This is a doctoral level course and as such, students are required to attend and be fully present for every synchronous course session. This means students are expected to participate in class sessions using a video link into the electronic classroom from a non-distracting location. If unavoidable, the student may be allowed to join by phone as long as the student notifies the professor in advance. However, under no circumstances may students do so on a regular basis.

LEARNING ENVIRONMENT

This class is a blended online (partial asynchronous, partial synchronous) class. The student is a co-creator of the learning experience and environment. It is the purpose of this class to provide knowledge and access to resources that will serve as a springboard for class collaboration and group projects. The course will include recorded lectures using voice-over PowerPoint, discussion blogs, reading assignments, assignments involving social media, online activities, and online group presentations.

TEXTS

Required


Recommended

The following book does very well at reviewing basic neuroscience and is online at the UT Library. There are also other good neuroscience ebooks in the library.


Several excellent books integrate neuroscience and therapy, and every year new ones come out. You will not need them for class but you might consider purchasing them for your clinical practice. They include:


COURSE REQUIREMENTS, ASSIGNMENTS, ASSESSMENT, AND EVALUATION METHODS

READINGS

All readings other than the required texts are on Blackboard and can be downloaded or read from there.

GRADING CRITERIA

<table>
<thead>
<tr>
<th>Course Criteria</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Participation</td>
<td>5</td>
</tr>
<tr>
<td>Build-the-Brain Exercise</td>
<td>20</td>
</tr>
<tr>
<td>Quiz 1</td>
<td>10</td>
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<tr>
<td>Quiz 2</td>
<td>10</td>
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<tr>
<td>Quiz 3</td>
<td>10</td>
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<tr>
<td>Quiz 4</td>
<td>10</td>
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<tr>
<td>Assessment paper</td>
<td>35</td>
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</tbody>
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Final Grade

The following grading scale is used for the final grade:

- 93 – 100 points A
- 88 – 92 points B+
- 83 – 87 points B
- 78 – 82 points C+
- 73 – 77 points C
- 68 – 72 points D+
- 63 – 67 points D
- <63 points F
Rubrics for Evaluation of Assignments

Rubrics for evaluating assignments are posted on Blackboard within the Assignments menu.

Build-a-Brain Exercise

In this exercise, which will continue throughout the semester, each group will be required to build a brain that can be displayed digitally and to present it to the class. The group may use its combined creativity to determine how it will build this brain. It might be a physical or symbolic representation of a brain, but it has to be able to be presented in an online environment. The purpose of this exercise is to help you become familiar with the brain by identifying the relevant parts of the social brain and their relevance to human social development as well as to identify the effects of chronic stress or trauma on the different parts of the social brain. The definition of the social brain for this exercise is those parts of the brain that contribute directly or indirectly to the social (interpersonal) development and experiences of the individual.

Groups may work asynchronously (not face-to-face) or synchronously (face-to-face) using online sessions or other tools available through your Groups space on BlackBoard. Grading will be based upon the group’s creativity, accuracy, and thoroughness in presenting the parts of the social brain, their functions, and the effects of chronic stress and trauma on these parts.

On the day students do the presentations to the class, all students will also hand in via Blackboard a brief response explaining the different portions of the project they and each of their colleagues had contributed. This is a way for me to make sure that there was either equal participation or that those students doing the bulk of the work receive scores higher than those of colleagues who failed to contribute as much. Because each person in a group hands these in, it provides me with this information from multiple perspectives.

Class Participation

This class has both units and sections within those units. There are 4 units and 10 sections. There will be a mixture of 1- and 2-hour online classes across sections. All online classes will be held within the www.zoom.us platform. The web link for these sessions will be posted on the Announcements page on Blackboard. Attendance is required, as is student use of a web cam to be “present” within the classroom. The participation grade will be based upon attendance, participation in class discussions, and quality of participation. If for any reason you cannot be at a class session, it is imperative that I be notified as far in advance as possible.

Quizzes

Four quizzes will be given during the semester, one for each unit. A study guide is provided for each unit or section.

Assessment Assignment

The primary assignment for this course is a 10 to 12 page neurobiological analysis and assessment of Mia Fontaine in the book, Comeback. You will assess her at the age she entered residential treatment the last time, although you may use material throughout the book to buttress your assessment. To complete this assignment, you will need to consider Mia’s behaviors, cognitions, and affect that could be interpreted from a neuroscience lens. More
specifically, you will need to analyze examples in the book that provide an understanding of Mia’s likely neurophysiological development through adolescence, considering both positive and negative factors that might have affected her development. These neural and genetic processes can be organized by developmental stage or environmental context. Because we do not know exactly what was happening in Mia’s brain, please use hypotheticals, such as, “It is likely that…”, or “This behavior could be indicative of…”. Please see Blackboard for more information about this assignment.

SYLLABUS SUMMARY

<table>
<thead>
<tr>
<th>Unit</th>
<th>Sect</th>
<th>Content</th>
<th>Assignments Due</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Setting the Framework</td>
<td>2-hr. Online Session</td>
<td>Aug. 20</td>
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<tr>
<td></td>
<td>2</td>
<td>Gene-environment Interaction</td>
<td>1-hr. Online Session</td>
<td>Aug. 27</td>
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<tr>
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<td>3</td>
<td>Social Brain</td>
<td>2-hr. Online Session</td>
<td>Sept. 3</td>
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<td>Quiz 1</td>
<td>Sept. 10</td>
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<td>4</td>
<td>Lifespan Development</td>
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<td>5</td>
<td>Neonatal &amp; Zero to Three</td>
<td>1-hr. Online Session</td>
<td>Sept. 17</td>
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<td>6</td>
<td>Childhood &amp; Adolescence</td>
<td>1-hr. Online Session</td>
<td>Sept. 24</td>
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<td></td>
<td>7</td>
<td>Adulthood</td>
<td>2-hr. Online Session</td>
<td>Oct. 1</td>
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<td>Quiz 2</td>
<td>Oct. 8</td>
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<td></td>
<td>7</td>
<td>Stress &amp; Trauma</td>
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<td></td>
<td>8</td>
<td>Adverse Childhood Experiences</td>
<td>2 hr. Online Session</td>
<td>Oct. 22</td>
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<tr>
<td></td>
<td>9</td>
<td>Stress</td>
<td>2 hr. Online Session</td>
<td>Oct. 29</td>
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<td></td>
<td></td>
<td>Trauma</td>
<td>2 hr. Online Session</td>
<td>Nov. 5</td>
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<td>Quiz 3</td>
<td>Nov. 12</td>
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<td></td>
<td>10</td>
<td>Treatment</td>
<td>2 ½ hr. Online Session</td>
<td>Nov. 19</td>
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<td>Build-a-Brain Presentations</td>
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<td>Quiz 4</td>
<td>Nov. 20</td>
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<td>Assessment Paper</td>
<td>Nov. 26</td>
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Note: All readings for the sections should be completed by the time of the online session for that section. For example, readings for Section 3 need to be completed by Sept.3.
UNIT & SECTION I: SETTING THE FRAMEWORK

Required Readings


SECTION 2: GENETICS OVERVIEW

Optional Papers and Tutorial

*(basic knowledge on DNA, genes, chromosomes, protein, Mendelian genetics)*

*A guide to your genome.* (2008). National Human Genome Research Institute (pp. 1-16)
http://www.genome.gov/Pages/Education/AllAbouttheHumanGenomeProject/GuideToYourGenome07.pdf

http://learn.genetics.utah.edu/content/begin/tour/


Required Readings


Required Videos

Learn.Genetics (2009). The epigenome at a glance. 1 minute 47 seconds (There are several other videos, interactive exercises, and more on this site. If you go to the home page, there are even more. All I have looked at are excellent. Feel free to explore these others but it is not required.) http://learn.genetics.utah.edu/content/epigenetics/


Required Web Sites

The human genome. This is the primary web site for the Human Genome Project. Please explore it to get a sense of what information is on it. http://www.ornl.gov/sci/techresources/Human_Genome/project/about.shtml

Optional Web Sites


Optional PowerPoint Slide Shows


SECTION 3: SOCIAL BRAIN

Required Readings


Recommended readings


Video, Required


Videos, Optional

2-Minute Neuroscience Series. (Watch different segments as desired.) https://www.youtube.com/channel/UCUgZq9PkDp1xaEivtfcJPSg
How neurotransmission works. https://www.youtube.com/watch?v=p5zFqT4aofoA
The chemical synapse. https://www.youtube.com/watch?v=TevNJYyATAM

UNIT II. LIFESPAN APPROACH

SECTION 4: NEONATAL AND 0 - 3 PERIODS

Optional Readings

If you are not very familiar with attachment theory and its propositions, I recommend reading the following materials. You will be held accountable for basic knowledge of the different types of attachment and the primary principles of attachment.


Required Readings


Recommended Readings


Required Web Links

Committee on Integrating the Science of Early Childhood Development. From neurons to neighborhoods: The science of early childhood development. National Research Council, Institute of Medicine, Board on Children, Youth, and Families.

Required Videos

Wider than the Sky
Attachment – Understanding the essential bond. American Museum of Natural History.
https://www.youtube.com/watch?v=kwxjuPIArY
Circle of Security http://www.youtube.com/watch?v=xH1CbC4No24

Optional Videos

The responsive brain. Annenberg Media.
http://www.learner.org/vod/vod_window.html?pid=1526

SECTION 5: CHILDHOOD AND ADOLESCENCE

Required Readings


**Recommended Readings**


**Required Video**

*The teenage brain: A world of their own.* PBS (video)  
http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/view/

**SECTION 6: ADULTHOOD AND OLDER ADULTHOOD**

**Required Readings**


**Recommended Readings**


UNIT III. STRESS & TRAUMA

SECTION 7: ADVERSE EXPERIENCES IN CHILDHOOD

Required Readings


Strathearn, L. (2011). Maternal neglect: Oxytocin, dopamine, and the neurobiology of attachment. Journal of Neuroendocrinology, 23, 1054-1065. (a rather challenging read but important information; don’t get bogged down in the more technical parts of the paper)


Recommended Readings


Required Videos


Required Web Sites


http://learn.genetics.utah.edu/content/begin/cells/cellcom/ (Play-by-play.pdf)
SECTION 8: STRESS

Required Readings


Chapter 2. Revolutions in understanding mind and brain (pp. 22 – 36).

Chapter 3. Looking into the brain: The neuroscience revolution (pp. 38 – 47).

Chapter 4. Running for your life: The anatomy of survival (pp. 51 – 73).

Recommended Readings


Recommended Videos

*When the Bough Breaks.* California Newsreel.


See website at [http://www.unnaturalcauses.org/](http://www.unnaturalcauses.org/) for more information. (1 hr)


[https://www.youtube.com/watch?v=Me07G3Erbw8](https://www.youtube.com/watch?v=Me07G3Erbw8)

SECTION 9: TRAUMA

NOTE: These papers will change slightly before the syllabus is finalized on Aug. 20. I want to add a paper on the neurobiology of complex PTSD, dissociation, and/or borderline personality disorder.

Required Readings


Chapter 5. Body-brain connection (pp. 74 – 86).
Chapter 6. Losing your body, losing your self (pp. 87 – 102).
Chapter 11. The unbearable heaviness of remembering (pp. 171 – 183).
Chapter 12. Uncovering secrets: The problem of memory (pp. 184 – 199).

Required Video:

Service: When women come marching home. (2012)

UNIT IV & SECTION 10: CLINICAL APPLICATION

Perry, B. D. (n/d). Overview of the Neurosequential Model of Therapeutics. The ChildTrauma Academy.
Chapter 13. Healing from trauma: Owning your self (pp. 204 – 229).
Epilogue (pp. 349 – 356).

Read your choice of one or more of the following chapters:
Chapter 15. Letting go of the past: EMDR (pp. 248 - 262).
Chapter 16. Learning to inhabit the body: Yoga (pp. 262 - 276).

Recommended Readings


Required Videos:

CONCLUSION