Neuropsychology

My grandpa's finger made its way over to the "9" on the telephone. My heartbeat accelerated as his finger approached the "1." Without hesitation I raced over towards him and ripped the telephone out of his hands before he could press another "1." He was furious as his skin turned a shade of red I've only seen on cherries. He shouted: "You don't know what your doing! You've ruined everything!" Frightened, I darted towards my room and locked the door.

Later that night, my grandpa, or papa as we call him, couldn't remember what had happened, or even who I was. Papa was diagnosed with Dementia and Parkinson's disease before I was even born. I was intrigued by his hallucinations and how his brain was eating itself alive. Most importantly, I wanted his memory to return. As I got older, my papa's brain continued to deteriorate, and he was put into a nursing home because he lost all of his motor functioning. As I saw all of these other seniors that couldn't walk or communicate, my heart broke for them and their families. I wanted to do something. Still to this day, I would like to pursue a career as a neurologist so I can diagnose, treat, and hopefully find a cure for brain disorders with research. My goal for the future is for every grandchild to look into their grandparents eyes and to be certain that their grandparents know who they are.

Consequently, as I was flipping through my 10th grade course catalog, psychology stood out to me. In my sophomore year of high school, I enrolled in an Introduction to Psychology course, which captivated my interest in the field. I decided to

continue on the psychology path by taking AP Psychology. This class gave me the opportunity to learn more about the brain and more about what was going on in my papa's brain.

In the Custom-Designed Major, I would be able to study the psychology of the brain and body by taking psychology and neuroscience courses. These courses will expand my knowledge surrounding the brain and its normal and abnormal functioning. Moreover, psychology classes touches upon several brain disorders, the learning process, and many other topics that science classes don't discuss. At Drexel University, I plan on enrolling in psychology courses such as "memory" and "abnormal psychology" to understand how we store our memories and the symptoms of brain disorders, along with how to treat them. I would also take more focused courses in psychology such as "Autism Spectrum Disorders" in order to focus on specific brain disorders and the treatments for them.

Nevertheless, the brain affects the entire body; accordingly the major will also have a mixture of other science courses, including biology, anatomy, chemistry, and health science classes. The brain emits several chemicals and hormones into the body, which maintains the body's homeostasis. Therefore, chemistry courses will expand my knowledge surrounding these molecules that are released by the brain. For instance, Potassium and Sodium are transmitted into and out of neurons as they send their messages. By learning about the chemistry of diffusion and of the different molecules, I could better understand the composition of these molecules and the chemical

processes the brain controls. Chemistry classes demonstrate how the body processes information in the brain molecularly and chemically, along with other systems. Some chemistry courses I prefer to take are “general chemistry 1” and “inorganic chemistry 1”, to better understand body functions at a molecular level.

Biology classes will build my knowledge surrounding cells and genetics, which also play a great role in behavior theorems in psychology. These courses also provide information surrounding the body systems and their functions. The brain is the control center of the body that manages all of these systems. In order to understand abnormal body functions, I have to understand normal body functions, taught by biology classes. Biology courses will teach me about body systems, while psychology classes will show how the brain controls these systems. Some biology courses I would enroll in include “behavioral neuroscience and “cells and genetics.” These classes will help me to understand the science behind our behaviors instead of the social outcomes that psychology classes teach, and what makes up our body. Afterall, many of our behaviors are influenced by our genetics, therefore, biology classes will teach how we obtain our DNA that affect our behavior.

Anatomy courses will teach me which organs, tissues, muscles, and bones make up each system, contributing to the maintenance of homeostasis. Therefore, if there is a failure of any organ, I will be able to understand its impact on the body system it’s located within and its impact on the brain. The brain attempts to fix the problem by emitting hormones that control various muscles, blood flow, and other systems, which

has an effect on the entire body. These classes will also teach about the structure of the connections between the brain and body systems, so I could understand how the brain controls each body system and the influence of these systems on eachother. Various anatomy courses I desire to enroll in are “anatomy and physiology 1-3” in order to understand the layout of the body and how the proximity of certain organs influence processes and to gain insight surrounding health professions.

Health science classes will explain medical terminology and advanced anatomy of various systems that the brain controls. These courses demonstrate how to properly interact with your patients- a critical sill to working in the health field so that your patients feel safe and in good hands. Nobody can possess a complete understanding of the brain without knowledge about the body. Some health science classes I would take are “neuroscience and “pathophysiology for health professions” to gain insight surrounding health professions and medical terms.

Overall- the brain’s function is to control the rest of the body to keep us healthy. Accordingly, I prefer to have an understanding of the entire body and how it normally functions, including all the body systems, anatomic structures, and molecular/chemical reactions, for an improved comprehension of the brain. A working name for this major would be: Neuropsychology. This major will be perfect for students who want to join the pre-medical track and specialize in a career surrounding brain. I intend to bring all the differing sciences together in order to not only learn about the brain, but also how it affects the entire body.

My educational goals can't be met with a psychology major because I also want to take biology, chemistry, and other science courses that teach me about the body and its processes chemically and biologically. Moreover, learning all the sciences, such as health science courses, will also build my knowledge on neuroscience and how to treat patients. On the other hand, I also am compelled to take a science major such as biology because I would like my studies to be more focused on the brain and its psychology, not focused on only cells or body systems. No traditional major could meet my educational needs; a focus in one of the sciences will refrain me from enrolling in various science courses that will prepare me for a complete comprehension of the brain.

An advantage of designing my own major is that I could include a co-op that will allow me to gain first hand knowledge from people who work in the neuroscience area, an interdisciplinary science. Whether this may be in a healthcare setting, residential setting, or a lab, I could gain a greater insight surrounding brain disorders in the co-op setting than I could receive in the traditional classroom. By drawing information from several different sciences together, I'm able to better understand each one of these systems, as well as the brain. I would also be able to possess an advanced understanding about how the brain impacts each system or portion of the body. In order for the entire body to function properly, each organ, muscle, body system, etc, must be connected to the brain. Without the brain, the heart wouldn't know how to pump and the lungs wouldn't know how to exchange oxygen. It's critical to understand the entire body to comprehend the brain. This is important in order to properly diagnose patients who

possess neurodegenerative disorders. My own grandfather with Parkinson's Disease struggles with muscle tremors. Without an understanding of the body systems and how they interact with the brain, he wouldn't have been diagnosed with a brain disorder. A malfunction in his brain is triggering muscle tremors by not releasing enough dopamine; it's not a motor condition.

This major will open the door for several different career opportunities, such as neurology, psychiatry, speech pathology, or optometry. As a volunteer at the Atria Senior Living Center and the Parkinson's Kickboxing class, I have built strong connections with people that have parkinson's disease, alziehmers, dementia, and other brain disorders. I created drum sequences which patients repeated to manage their symptoms and to hopefully slow the progression of Parkinson's disease. I've seen the seniors brains' at the Atria Senior Living Center slowly deteriorate throughout the three years I've been volunteering there. These experiences have taught me the harsh reality of the loss of control of motor functions and memory. More importantly, I've learned how to work with people who suffer from brain disorders. With the neuropsychology major, I will possess the ability to provide essential care to patients in a variety of careers surrounding the brain. My goal is to ultimately help restore some memories and portions of the brain that are being damaged of patients who suffer from neurodegenerative disorders.

PLAN OF STUDY

Class Status: Freshman Term: FALL 2020

Name	Course ID	Pre-Requisites	Credits
Coursename	CRSE 101	CRSE 100 or N/A	3.0
Introduction to Multi-Disciplinary Methods	CSDN 101	N/A	1.0
Spanish I	SPAN 101	N/A	4.0
Composition and Rhetoric I: Inquiry and Exploratory Research	ENGL 101		3.0
Cells and Genetics	BIO 122	N/A	4.5
General Psychology I	PSY 101	N/A	3.0
			TOTAL: 15.5

Class Status: Freshman Term: WINTER 2021

Name	Course ID	Pre-Requisites	Credits
Knowledge By Design Seminar	CSDN 102	CSDN 101	1.0
Anatomy & Physiology I	ANAT 101	N/A	5.0
Spanish II	SPAN 102	SPAN 101	4.0
Medical Terminology	HSCI 125	N/A	3.0
Sensation and Perception	PSY 213	N/A	3.0
			TOTAL: 16

Class Status: Freshman Term: SPRING 2021

Name	Course ID	Pre-Requisites	Credits
Calculus I	MATH 121	MATH 050	4.0
Spanish III	SPAN 103	SPAN 102	4.0
Anatomy & Physiology II	ANAT 102	ANAT 101	5.0
			TOTAL: 13

Class Status: Freshman Term: SUMMER 2021

Name	Course ID	Pre-Requisites	Credits
NO CLASS			

Class Status: Sophomore Term: FALL 2021

Name	Course ID	Pre-Requisites	Credits
Neuroscience: From Cells to Circuits	BIO 348	BIO 122	3.0
General Chemistry I	CHEM 101	Chem 050	3.5
Physiological Psychology	Psy 212	N/A	3.0
Child Psychopathology	PSY 225	PSY 101	3.0
			TOTAL: 12.5

Class Status: Sophomore Term: WINTER 2022

Name	Course ID	Pre-Requisites	Credits
Innovative Problem Solving	CSDN 210	N/A	3.0
Abnormal Psychology	PSY 240	N/A	3.0
Cognitive Neuroscience	PSY 312	N/A	3.0
General Chemistry 2	CHEM 102	Chem 101	4.5
Behavioral Neuroscience	BIO 349	BIO 122	3.0
			TOTAL: 16.5

Class Status: Sophomore Term: SPRING 2022

Name	Course ID	Pre-Requisites	Credits
Multimodal Research	CSDN 220	N/A	3.0
Evolutionary Psychology	PSY 210	N/A	3.0
Neurobiology of Autism Disorders	BIO 461	BIO 349	3.0
Neuroscience	HSCI 435	ANAT 102	5.0
Anatomy & Physiology III	ANAT 103	ANAT 102	5.0
			TOTAL: 19

Class Status: Sophomore Term: SUMMER 2022

Name	Course ID	Pre-Requisites	Credits
Developmental Psychology	PSY 120	N/A	3.0
Calculus II	Math 122	Math 121	4.0
Organic Chemistry I	CHEM 241	Chem 102	4.0
Fundamentals of Physics I	PHYS 101	PHYS 050	3.0
			TOTAL: 14

Class Status: Junior Term: FALL 2022

Name	Course ID	Pre-Requisites	Credits
Autism Spectrum Disorders	PSY 450	PSY 120	3.0
Physiology	PHGY 325	ANAT 101-103	5.0
Human Physiology I	BIO 201	BIO 122	4.0
			TOTAL: 12

Class Status: Junior Term: WINTER 2023

Name	Course ID	Pre-Requisites	Credits
Custom-Designed Major Seminar*	CSDN 203	N/A	3.0
Cognitive Psychology	PSY 330	PSY 101	3.0
Neuropsychology	PSY 410	PSY 101	3.0
Advanced Anatomy	HSCI 420	ANAT 103	5.0
			TOTAL: 14

Class Status: Junior Term: SPRING 2023_

Name	Course ID	Pre-Requisites	Credits
Co-op	COOP 201		
Molecular Mechanisms of Neurodegeneration	BIO 463	BIO 349	3.0
			TOTAL: 3.0

Class Status: Junior Term: SUMMER 2023

Name	Course ID	Pre-Requisites	Credits
Co-op	COOP 201		
			TOTAL: 0

Class Status: Senior Term: FALL 2023

Name	Course ID	Pre-Requisites	Credits
Senior Capstone	CSDN 304	N/A	3.0
Thermodynamics and Kinetics	CHEM 253	Chem 102	4.0
Biology of Neuron Function	BIO 462	BIO 348	3.0
Inorganic Chemistry I	CHEM 421	Chem 253	3.0
			TOTAL: 13

Class Status: Senior Term: WINTER 2024

Name	Course ID	Pre-Requisites	Credits
Senior Capstone	CSDN 305	N/A	3.0
Neurobiology of Disease	BIO 465	BIO 348/349	3.0
Neuroscience	NEUR 410	ANAT 103/Bio 201/Bio 202	4.0
Drugs & Human Behavior	PSY 310	PSY 101	3.0
Memory	PSY 463	N/A	3.0
			TOTAL: 16

Class Status: Senior Term: SPRING 2024

Name	Course ID	Pre-Requisites	Credits
Senior Capstone	CSDN 306	N/A	3.0
Psychology of Disability	PSY 242	N/A	3.0
Drosophila Neural Research	BIO 213	BIO 122	3.0
Pathophysiology for Health Professions	HSCI 382	ANAT 103	5.0
Physiology	HSCI 320	ANAT 101-103	5.0
			TOTAL: 19

186.5 credits total