

Neuroscience High School Summer Camp Schedule
10:00am to 4:00pm

WEEK ONE

Mon 7/21 Introduction to the Brain and Central Nervous System and Spinal Cord Injury

9:30-10:00 Orientation: Camp program and BB LEARN explained.

10:00-12:00 Jed Shumsky, course director of Medical Neuroscience, will provide an overview of the neuroanatomy of the brain and central nervous system.

1:00-4:00 Dr. Jed Shumsky will give a lecture on how nerve conduction works. 3:00 Alex Benson will discuss systems neuroscience.

Tue 7/22 Gross Anatomy Experience in the Health Sciences Building

9:30 *Shuttle Bus departs from Queen Lane*

10:00-12:00 Students will work in groups in the Gross Anatomy Lab to identify structures on an actual human brain with guidance from Drs. Shumsky, Azim, Peterson, Frank, Veazey, Bezdudnaya, and Howe.

1:00-4:00 Students will work in groups in the Gross Anatomy Lab to identify spinal cord and spinal nerves and other anatomical structures with guidance from Drs. Shumsky, Azim, Peterson, Frank, Veazey, Bezdudnaya, and Howe. Theresa Conners will be available to show human cadavers.

3:45 *Shuttle bus departs from Health Sciences Building*

Wed 7/23 Cellular Neuroscience

10:00-12:00 Dr. Oscar Qiang will discuss advances in stem cell biology and how neurons differentiate, sprout axons, and form synapses on the cellular level. 11:00 Dr. Sri Somarowthu will discuss cancer biology and provide some examples of neuro-oncology.

1:00-4:00 Maurice Lindner-Jackson, Jenna Hunt, and Grace Giddings will demonstrate methods used in cellular neuroscience research and other research techniques.

Thu 7/24 Spinal Cord Injury and Locomotion

10:00-12:00 Graduate student Adam Hall will describe the structure and function of the spinal cord, detailing various sensory and motor pathways and the consequences of spinal cord injury. 11:00 Graduate student Laura Schoenhals will discuss locomotion and gait.

1:00-4:00 Adam Hall, Laura Schoenhals, and Sophie Cohen will demonstrate methods used in systems neuroscience research and other research techniques.

Fri 7/25 Sensory systems

10:00-12:00 Dr. Homaira Azim, course director of Human Structure and Function, will describe the human sensory systems, comparing and contrasting the various receptors, transduction mechanisms, and pathways leading to sensory perception.

1:00-4:00 The afternoon will include a presentation from Drexel Admissions on how to apply to college. Dr. Denise Garcia will discuss Drexel's undergraduate Neuroscience major. 2:15 Then students will explore visual illusions and sensory discrimination capabilities led by Corrine Marble. At the end, Dr. Shumsky and graduate students research mentors (Tyler Gray, Shanna Samels, Grace Giddings and Akshaya Sridharan, and Jason Wheeler and Corrine Marble) will introduce the research projects for the coming week.

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WEEK TWO

Mon 7/28 Neuropharmacology

10:00-12:00 Dr. Jed Shumsky will describe neurotransmitter receptor systems and explain how these have been used to design pharmacologic treatments for psychiatric disorders.

1:00-4:00 Research groups will work on their research projects under the graduate student supervision.

Tue 7/29 Animal Care and Use

10:00-12:00 Andrea McCurry, Executive Director of University Laboratory Animal Research, will speak about the ethics of animal research. She and Dr. Shumsky will lead a tour of the Animal Facility.

12:30-4:00 **Grad Student Panel:** All of the available graduate student helpers will chat with the group about their journeys to choose to pursue neuroscience. Research projects will continue.

Wed 7/30 Research Projects

10:00-12:00 Research projects will continue.

1:00-4:00 Dr. Shumsky will give an overview of how to design presentations to best convey the information we have. Groups will begin planning their presentations to provide an overview of what they have learned on that topic, and a future experiment that they think would be an interesting ‘next step’ to explore. Research groups will meet with Graduate students to finalize research projects as needed and to plan presentations.

Thu 7/31 Comparative Neuroanatomy

10:00-11:00 Dr. Haviva Goldman, course director for Microanatomy and Human Structure and Function, will discuss the evolutionary origins of the skull and the brain.

12:15-5:00 We will take the Drexel Shuttle downtown for a field trip to have a “behind the scenes” tour of the Academy of Natural Sciences and to the Franklin Institute to see the Brain Exhibit and other exhibits of interest.

Fri 8/01 Brain Machine Interfacing

10:00-12:00 Dr. Simon Giszter, researcher in the neurorobotics and motor systems, will describe recent advances in the field of how the brain can control machines such as prosthetics for rehabilitation.

1:00-2:00 Students will finalize research projects and practice the group presentations.

2:00-3:30 Students will present the results of their projects to the graduate students and faculty

3:30-4:00 Camp wrap up and awarding of certificates of completion.