

# **Open Stax: An Open Education Resource for Faculty and Students**

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# Road Map

1. Warm Up Questions
2. Overview of OpenStax Resource
3. Teaching Example: How OpenStax is Used in MCST 606 (Advanced Cannabis Therapeutics for Neuropsychiatric Disorders)

# Warm Up

- Have you ever felt like students in your class do not perform as well because they do not purchase required texts?
- What resources do you use to find graphics or illustrations for slides and learning materials?
- Do you ever use any Open Educational Resources (OER) for class? If so, which ones do you use?

# Overview of OpenStax

# What is OpenStax?

- Source of peer-reviewed textbooks and educational materials that are openly licensed and available at no cost online
- Focused on undergraduate subjects, but many of the materials are relevant to graduate courses as well
- Student account – enables notes and highlighting in the books
- Educator account – unlocks instructor content and teaching materials


# Microbiology

Book details


Instructor resources

Student resources

## Get the book

 [Table of contents](#)

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OpenStax printed textbooks cost between \$18-\$60, lower than the average cost of a print textbook offered by a for-profit publisher. Support OpenStax with your purchase through Amazon.

### Individual

As an Amazon Associate we earn from qualifying purchases.

## Summary

*Microbiology* covers the scope and sequence requirements for a single-semester microbiology course for non-majors. The book presents the core concepts of microbiology with a focus on applications for careers in allied health. The pedagogical features of the text make the material interesting and accessible while maintaining the career-application focus and scientific rigor inherent in the subject matter. *Microbiology's* art program enhances students' understanding of concepts through clear and effective illustrations, diagrams, and photographs.

*Microbiology* is produced through a collaborative publishing agreement between OpenStax and the American Society for Microbiology Press. The book aligns with the curriculum guidelines of the American Society for Microbiology.

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# Additional OER Resources

- [Maryland Open Source Textbook \(M.O.S.T.\) Commons](#)
- [OER Commons](#)
- [Open Educational Resources \(OER\)](#) - EDUCAUSE
- [OER in action](#) - UNESCO
- [Open Education Network](#)
- [Open Education](#) - SPARC

# Teaching Example



# Welcome to Advanced Cannabis Therapeutics for Neuropsychiatric Disorders (MCST 606)

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# Topics Covered

Module 1 – Anatomy and Physiology for Mental Health Disorders

Module 2 – Clinical Considerations for Patients with Mental Health Disorders

Module 3 – Psychosis

Module 4 – Anxiety

Module 5 – Posttraumatic Stress Disorder

Module 6 – Insomnia

Module 7 – Mood

Module 8 – Epilepsy

# Required Textbooks and Materials

You do not need to purchase any additional resources for this class. eBooks, articles, and databases are available for you free of charge through the University of Maryland Health Science and Human Services library (HS/HSL) and OpenStax

## To obtain materials available through HS/HSL, you will need to be logged into off-campus library access

See links that detail how to obtain off-campus library access in the **Resource Section** in Module 1.

- [Off-campus library access instructions](#): This page contains tips for successfully accessing resources from off-campus
- [How to find and use HS/HSL eBooks](#): This video reviews how to find and use HS/HSL eBooks
- [How to access full text articles from PubMed via HS/HSL](#): This video reviews how to access full text articles from PubMed using the HS/HSL library










## To obtain the Anatomy and Physiology textbooks, you will need to create a free student account with OpenStax

See links that detail how to obtain an OpenStax account **Resource Section** in Module 1.

- [Create an account at OpenStax](#)

## How to Proceed

### Module Road Map (Activities/Assignments) (Graded activities will always appear in RED)

- (1) VIEW Course and Module 1 Overview Video
- (2) PARTICIPATE in Discussion 1.1 - Introduce Yourself (10 points)
- (3) VIEW Anatomical Divisions of the Nervous System and Parts of a Neuron Video (10 min)
  - Slides:  [Anatomical Divisions of the Nervous System & Parts of a Neuron Slides](#)  
  - Transcript: Anatomical Divisions of the Nervous System and Parts of a Neuron Transcript
  - *Supplementary (optional) resources:*
    - Chapter: [Chapter 12.1 Basic Structure and Function of the Nervous System](#)
    - Chapter: [Chapter 3.2 - Cells of the Nervous System](#)
- (4) VIEW Functional Divisions of the Nervous System Video (15 min)
  - Slides:  [Functional Divisions of the Nervous System Slides](#)  
  - Transcript: Functional Divisions of the Nervous System Transcript
  - *Supplementary (optional) resources:*
    - Chapter: [Chapter 12.1 Basic Structure and Function of the Nervous System](#)
- (5) VIEW Neurotransmission Video (10 min)
  - Slides:  [Neurotransmission Slides](#)  
  - Transcript: Neurotransmission Transcript
  - *Supplementary (optional) resources:*
    - Video: [Neuron Action Potential Physiology](#) (10 min 24 sec)

## 12.1 Basic Structure and Function of the Nervous System

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	▶ Support and Movement	
	▼ Regulation, Integration, and Control	
	▼ 12 The Nervous System and Nervous Tissue	
	Introduction	
	<b>12.1 Basic Structure and Function of the Nervous System</b>	
	12.2 Nervous Tissue	
	12.3 The Function of Nervous Tissue	
	12.4 The Action Potential	
	12.5 Communication Between Neurons	
	Key Terms	
	Chapter Review	
	Interactive Link Questions	
	Review Questions	
	Critical Thinking Questions	
	▶ 13 Anatomy of the Nervous System	
	▶ 14 The Somatic Nervous System	
	▶ 15 The Autonomic Nervous System	
	▶ 16 The Neurological Exam	
	▶ 17 The Endocrine System	



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### Learning Objectives

By the end of this section, you will be able to:

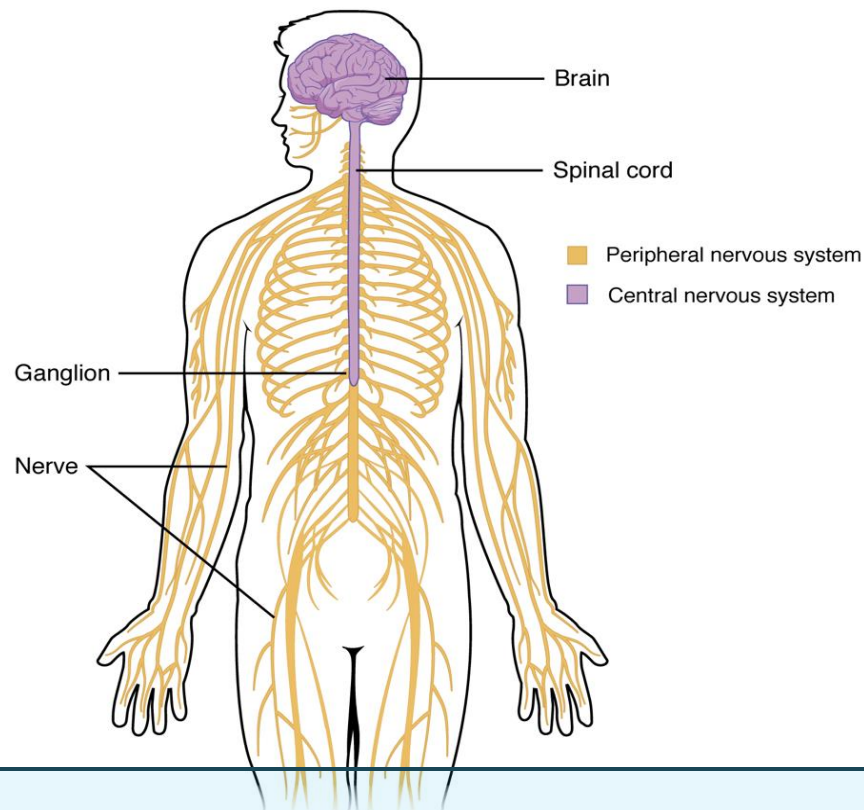
- Identify the anatomical and functional divisions of the nervous system
- Relate the functional and structural differences between gray matter and white matter structures of the nervous system to the structure of neurons
- List the basic functions of the nervous system

The picture you have in your mind of the nervous system probably includes the **brain**, the nervous tissue contained within the cranium, and the **spinal cord**, the extension of nervous tissue within the vertebral column. That suggests it is made of two organs—and you may not even think of the spinal cord as an organ—but the nervous system is a very complex structure. Within the brain, many different and separate regions are responsible for many different and separate functions. It is as if the nervous system is composed of many organs that all look similar and can only be differentiated using tools such as the microscope or electrophysiology. In comparison, it is easy to see that the stomach is different than the esophagus or the liver, so you can imagine the digestive system as a collection of specific organs.

### The Central and Peripheral Nervous Systems

The nervous system can be divided into two major regions: the central and peripheral nervous systems. The **central nervous system (CNS)** is the brain and spinal cord, and the **peripheral nervous system (PNS)** is everything else ([Figure 12.2](#)). The brain is contained within the cranial cavity of the skull, and the spinal cord is contained within the vertebral cavity of the vertebral column. It is a bit of an oversimplification to say that the CNS is what is inside these two cavities and the peripheral nervous system is outside of them, but that is one way to start to think about it. In actuality, there are some elements of the peripheral nervous system that are within the cranial or vertebral cavities. The peripheral nervous system is so named because it is on the periphery—meaning beyond the brain and spinal cord. Depending on different aspects of the nervous system, the dividing line between central and peripheral is not necessarily universal.

# Nervous System

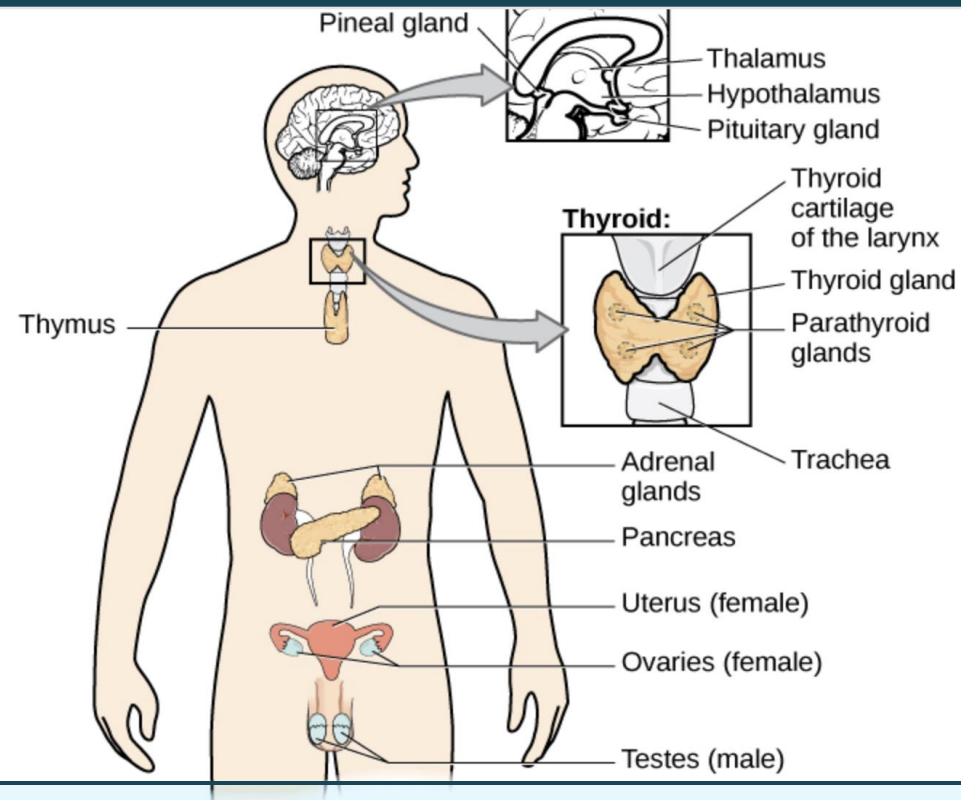


System made of cells that allow the body to quickly sense, integrate information, and respond to external and internal environment

Uses electrical and chemical signaling

Neurotransmitters (chemical signals) act quickly, locally, and for a short duration of time

# Endocrine System



System of glands that secrete hormones into extracellular space to cause responses inside body

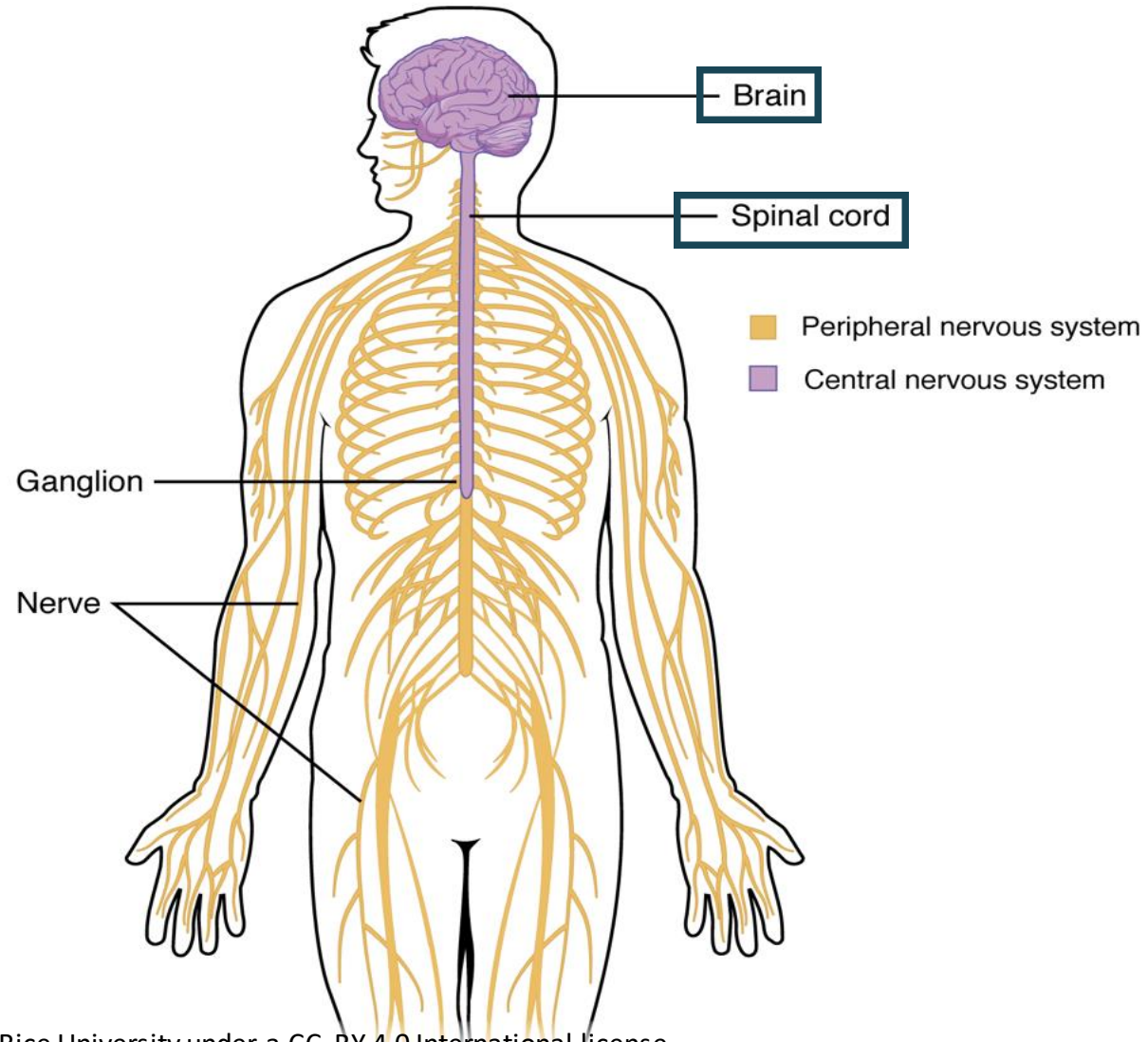
Hormones primarily travel through bloodstream (short or long distance)

Some hormones have short response times, while others take longer to respond

# Anatomical Divisions of the Nervous System

**Central  
Nervous  
System (CNS)**

**Peripheral  
Nervous  
System (PNS)**



What resources do you use to teach anatomy and physiology?



Thank you!

What questions do you have?