The BIOLOGY of PSYCHOLOGY: everything psychological is simultaneously biological.

UNIT OVERVIEW							
GENERAL INFORMATION							
Terms:		**Duration:**	3.5 Week(s)	**Start Date:**	9/21/15	**Finish Date:**	
Learning Area(s):				**Year(s):**	12		
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SYLLABUS DESCRIPTION

UNIT FOCUS
Neural processing and the endocrine system. The neuron. The brain The parts of the barin. The CNS and the PNS. Genetics Environmental factors Evolutionary Psychology

PRIOR LEARNINGS / CONNECTIONS
ANATOMY HEALTH BIOLOGY For AP students - memory and the brain

ADDITIONAL INFORMATION		
RESOURCES		
No.	**Description**	**Files / Links**
RES0	AP FRQ 2012	
RES1	AP FRQ 2009	
RES2	Myers video clips.	
RES3	NS chart	
RES4		

COMMENTS / NOTES

STAGE 1: DESIRED RESULTS - KEY UNDERSTANDINGS

Established Goals

Curriculum

Other Goals

Transfer

Students will be able to independently use their learning to...

To feel confident that they can use the scientific method, along with their professors, to study psychological phenomena.

To know that as engineers, biologists or psychologists, they may lead the way in developng new technologies that lead to improved life experiences for sentient beings.

To understand that in college they can learn to analyze how the brain shapes, and is shaped by, behavior.

MEANING

UNDERSTANDINGS	ESSENTIAL QUESTIONS
Students will understand that...	*Students will keep considering...*
OVERVIEW of ENTIRE UNIT...	How much control do we have over our thoughts and behavior?
The body is composed of cells.Some cells are nerve cells that conduct electricity and talk to one another by sending chemical messages across the tiny gap (synaptic cleft) that separates them. Specific brain systems serve specific functions. We integrate informationprocessed in these different brain systems to construct our experienc of sights and sounds, meanings and memories, passion and pain. Our adaptive brain is wired by our experience.	What can we learn from case studies? What biases might we have in researchng or seekng to cure psychological problems?
Only in the last 50 years have we begun to be clear about the brain and the mind	What is the interplay of brain structure, the endocrine system and genetics?
However, humans have always wanted to understand human. We did and do use religion, philosophy, etc. to that end today	How and why does the endocine system support us as organisms?
One of the main goals of psychology is to relieve suffering.	
How we study the brain changes constantly	
To appreciate the brain, we will look at its constituant parts	
While there are many ways of exploring, we will adhere closely to the scientific method	

Once we know these parts, we can evaluate solutions and approaches to mental health

The scientific method has its limitations

The endocrine system provides a parallel system for our survival

The structure and function of the brain affect human psycholog

ACQUISITION OF KNOWLEDGE AND SKILL

KNOWLEDGE	SKILLS
Students will know...	*Students will be skilled at...*
Phrenology/Gall/early 1800's	Identifying specific brain parts by name, location and function.
Different names for biological psychologists. Behavioral neuropsychologists, neuropsychologists, behavior geneticists, physiological psychologists, biopsychologists.	Identifying parts of the endocrine system; be able to indicate which hormones come fom which gland, and what these hormones do for us psychologically.
Myeln sheath: insulate and speeds; grows til 25; incrqses neural efficncy, judgement and self-control; degeneratikn...muscle control slows, MS.	Describe how scientists have studied, do study, and will study the brain.
The endocrine system	Drawng and labeling the neuron.
CNS	Drawing and labeling 2 neurons interacting.
PNS neuron: axons speak, dendrites listen.	Draw the ionic process of neural charge from a description.
Cerebral cortex - 4 lobes Brain development - 3 parts Hemispheric specialization - 2 parts	Draw the ionic process of neural charge from memory.
Specialized areas Limbic system Broca and Werncke Corpus Collosum	

Neurotransmitters

Brains and neral systems are quite similar. Thus we can learn from studying animal brains.

Our complexity is in our interneurons. We have many billions of these, while there are millions of sensory and motor neurons.

Hormones

Neural impulses take mlliseconds (thousandths of a second). Thus, reqction to book fallng to the floor can take a quarter of a second.

The neural impulse: one direction, all or nothing, bullet/trigger like.

Neuron transmits signal when triggered by chemical signals from neighboring neurons. This impulse (called the action potential) is a brief electrical chargethat travels down the axon. It is all-or-nothing, one-way and electrochemical.

The details of synaptic transmission.

Be able to describe the ionic process of neural excitation.

Neuroransmitters influence ability and behavior. ACh is the best understood. Three things to remember abut ACh: learning and memory, it is the messenger at every junction between a motor neuron and skeletal muscle, Alz. Impedes the production of ACh.

Drugs and chemicals alter neurotransmission at the synapse.

If given drugs, brain may stop producing its own neurotransmitters. When drug stops, withdrawal.

Agonist..similar..enhance or greatly exagerate natural reaponses.
(Black widow spider venom floods synapse with ACh.....tremors/death.

Antagonists..OTOH..BLOCK NT funtion. Botulin/botox/blocks

	ACH...paralyzes Facial muscles, so no wrinkles. curare does the same and paralyzes hunts animals. ns=cns+pns	

STAGE 2: ASSESSMENT EVIDENCE			
PERFORMANCE TASK(S)			
Coding	**Code**	**Evaluative Criteria**	**Description**
K5 K9 K6 S1 K4	PT1	1. All students can recognize brain parts given location or function. Learning goals and scales. For assessments... .... 4- all students demonstrate mastery without assistance. 3- all students demonstrate mastery, some with assistance. 2-most students demonstrate mastery. 1-some students demonstrate mastery.	Students will recognize brain parts, locations and functions. AP students will also recall brain parts, locations and functions on open-ended quizzes. AP students will be able to elaborate on the brain and psychology in the AP exam format.

OTHER EVIDENCE			
Coding	**Code**	**Evaluative Criteria**	**Description**
K5 U11 S1 U6	OE1	Learning goals and scales. For assessments... .... 4- all students demonstrate mastery without assistance. 3- all students demonstrate mastery, some with assistance. 2-most students demonstrate mastery. 1-some students demonstrate mastery.	Students can make models by copying a picture. Students can make models in dyads. Students can elaborate on brain function from a model.

STAGE 3: LEARNING PLAN

PRE-ASSESSMENTS

Quck pre-test. What do you know about neurons? Sketch them out and label what you know.

Take exam from 2012. List all biological questions in detail. What do you know?

Coding	Code	Description	Extension / Modification
K12 K11 K10	LE1	Students will review a series of online video clips of 1-3 minutes duration which depict neural transfer. (Homework)	
S4	LE2	Draw and label neuron using your text.	
S5	LE3	Draw and label two neurons interacting.	Practice using short term memory. Distributed practice: long erm memory.
S7	LE4	Draw the ionic charge of a neuron from memory. Label everything.	
K13 K14 K10 K11 K12	LE5	ZONK and/or Kahoot practice after school.	
K10 K11 K6 K12	LE6	We are neurons. Pass neurotransmitters.	
K13 K14 K8 K11 K12	LE7	Quizlet practice.	
K13 K14 K10 K11	LE8	Jeopardy practice.	

K12			
S4 K12 K14 S6 S5 K13	LE9	QUIZ on neuron.	
Stdent self-evaluation and planning for improvement. K12 K14 K11 K13	LE10	KWL Student self-assessment. List what you know. Have a partner verbally quiz you - prove you know it. Revise What you know. What did you miss and why? devise a plan for W/L wih partner.	
K19 PT1 OE1	LE11	Students can quickly draw and explain the nervous system.	
K13 K14 K10 K11 K12	LE12	Pre-quiz on neuron. Definitions.	