

# PSY M02: INTRODUCTION TO BEHAVIORAL NEUROSCIENCE

**Originator**

vboucquey

**Co-Contributor(s)****Name(s)**

Vieira, Danielle (dvieira)

**College**

Moorpark College

**Discipline (CB01A)**

PSY - Psychology

**Course Number (CB01B)**

M02

**Course Title (CB02)**

Introduction to Behavioral Neuroscience

**Banner/Short Title**

Intro Behav Neuroscien

**Credit Type**

Credit

**Start Term**

Fall 2022

**Catalog Course Description**

Introduces the scientific study of the biological bases of behavior and its fundamental role in the neurosciences. Addresses physiological, hormonal, and neurochemical mechanisms, and brain-behavior relationships underlying the psychological phenomena of sensation, perception, regulatory processes, emotion, learning, memory, and psychological disorders. Notes historical scientific contributions and current research principles for studying brain-behavior relationships and mental processes. Discusses ethical standards for human and animal research in the context of both invasive and non-invasive experimental research.

Course Credit Limitations: Credit will not be awarded for both the honors and regular version of a course. Credit will be awarded only for the first course completed with a grade of "C" or better or "P". Moorpark College Honors Program requires a letter grade.

**Taxonomy of Programs (TOP) Code (CB03)**

2001.00 - Psychology, General

**Course Credit Status (CB04)**

D (Credit - Degree Applicable)

**Course Transfer Status (CB05) (select one only)**

A (Transferable to both UC and CSU)

**Course Basic Skills Status (CB08)**

N - The Course is Not a Basic Skills Course

**SAM Priority Code (CB09)**

E - Non-Occupational

**Course Cooperative Work Experience Education Status (CB10)**

N - Is Not Part of a Cooperative Work Experience Education Program

**Course Classification Status (CB11)**

Y - Credit Course

**Educational Assistance Class Instruction (Approved Special Class) (CB13)**

N - The Course is Not an Approved Special Class

**Course Prior to Transfer Level (CB21)**

Y - Not Applicable

**Course Noncredit Category (CB22)**

Y - Credit Course

**Funding Agency Category (CB23)**

Y - Not Applicable (Funding Not Used)

**Course Program Status (CB24)**

1 - Program Applicable

**General Education Status (CB25)**

Y - Not Applicable

**Support Course Status (CB26)**

N - Course is not a support course

**Field trips**

Will not be required

**Grading method**

(L) Letter Graded

**Alternate grading methods**

(O) Student Option- Letter/Pass

(P) Pass/No Pass Grading

**Does this course require an instructional materials fee?**

No

**Repeatable for Credit**

No

**Is this course part of a family?**

No

**Units and Hours**

**Carnegie Unit Override**

No

**In-Class**

**Lecture**

**Minimum Contact/In-Class Lecture Hours**

52.5

**Maximum Contact/In-Class Lecture Hours**

52.5

**Activity****Laboratory****Total in-Class****Total in-Class****Total Minimum Contact/In-Class Hours**

52.5

**Total Maximum Contact/In-Class Hours**

52.5

**Outside-of-Class****Internship/Cooperative Work Experience****Paid****Unpaid****Total Outside-of-Class****Total Outside-of-Class****Minimum Outside-of-Class Hours**

105

**Maximum Outside-of-Class Hours**

105

**Total Student Learning****Total Student Learning****Total Minimum Student Learning Hours**

157.5

**Total Maximum Student Learning Hours**

157.5

**Minimum Units (CB07)**

3

**Maximum Units (CB06)**

3

**Prerequisites**

PSY M01 or PSY M01H

**Advisories on Recommended Preparation**

ENGL M01A or ENGL M01AH and PSY M06

**Entrance Skills****Entrance Skills**

PSY M01 or PSY M01H

**Prerequisite Course Objectives**

PSY M01-explain major theories and concepts of human behavior during consecutive eras.

PSY M01-apply methods and research findings in psychology including the scientific approach, research design, the use of statistics, and ethics to understand the role of reviewing scientific evidence throughout the study of human behavior.

PSY M01-analyze biological bases of behavior, including the relationship between human behavior, neurological functioning, and perception/cognition.

PSY M01-recognize major developmental changes across the lifespan in behavior and mental processes.

PSY M01-distinguish between altered and waking consciousness and understand components of stages of sleep.

PSY M01-differentiate among three types of learning: classical conditioning, operant conditioning, and observational learning.

PSY M01-explain current models of memory and the role of brain functioning.  
 PSY M01-distinguish between the current theories of motivation and emotion.  
 PSY M01-compare and contrast major personality theories (e.g., psychoanalytic, social learning, and trait factor theories).  
 PSY M01-analyze the effect of stress on physical functioning and factors that influence resilience.  
 PSY M01-identify factors used to establish abnormal behavior, understand the classification system of the current Diagnostic and Statistical Manual of Mental Disorders, and list criteria for psychological disorders such as mood disorders, anxiety disorders, and schizophrenia.  
 PSY M01-identify therapeutic approaches for psychological disorders.  
 PSY M01-explain how social psychology principles influence such attitudes and behaviors as obedience, conformity, prejudice, aggression, and prosocial behavior.  
 PSY M01-recognize the role of applied psychology (e.g., clinical, community, and health).  
 PSY M01-distinguish between sensation and perception and understand the subjective nature of perception.  
 PSY M01H-explain major theories and concepts of human behavior during consecutive eras.  
 PSY M01H-apply methods and research findings in psychology including the scientific approach, research design, the use of statistics, and ethics to understand the role of reviewing scientific evidence throughout the study of human behavior.  
 PSY M01H-analyze biological bases of behavior, including the relationship between human behavior, neurological functioning, and perception/cognition.  
 PSY M01H-recognize major developmental changes in behavior and mental processes across the lifespan.  
 PSY M01H-distinguish between altered and waking consciousness and understand components of stages of sleep.  
 PSY M01H-differentiate among three types of learning: classical conditioning, operant conditioning, and observational learning.  
 PSY M01H-explain current models of memory and the role of brain functioning.  
 PSY M01H-distinguish between the current theories of motivation and emotion.  
 PSY M01H-compare and contrast major personality theories (e.g., psychoanalytic, social learning, and trait factor theories)  
 PSY M01H-analyze the effect of stress on physical functioning and factors that influence resilience.  
 PSY M01H-identify factors used to establish abnormal behavior, understand the classification system of the current Diagnostic and Statistical Manual of Mental Disorders, and list criteria for psychological disorders such as mood disorders, anxiety disorders, and schizophrenia.  
 PSY M01H-identify therapeutic approaches for psychological disorders.  
 PSY M01H-explain how social psychology principles influence such attitudes and behaviors as obedience, conformity, prejudice, aggression, and prosocial behavior.  
 PSY M01H-recognize the role of applied psychology (e.g., clinical, community, and health).  
 PSY M01H-distinguish between sensation and perception and understand the subjective nature of perception.  
 PSY M01H-HONORS OBJECTIVES: evaluate how findings from classic experiments in psychology can be applied to human behavior and mental processes.  
 PSY M01H-HONORS OBJECTIVES: analyze peer-reviewed scholarly articles on psychological topics such as self-control, prejudice, or depression to understand how psychologists use the scientific method to better understand behavior and mental processes.  
 PSY M01H-HONORS OBJECTIVES: analyze current events in terms of psychological concepts and theories.

## Requisite Justification

### Requisite Type

Prerequisite

### Requisite

PSY M01 or PSY M01H

### Requisite Description

Course in a sequence

### Level of Scrutiny/Justification

Required by 4 year institution

### Requisite Type

Recommended Preparation

### Requisite

ENGL M01A OR ENGL M01AH

### Requisite Description

Other (specify)

### Specify Other Requisite Description

Recommended level of communication skill

**Level of Scrutiny/Justification**

Required communication/computation skill

**Requisite Type**

Recommended Preparation

**Requisite**

PSY M06

**Requisite Description**

Course not in a sequence

**Level of Scrutiny/Justification**

Content review

**Student Learning Outcomes (CSLOs)**

**Upon satisfactory completion of the course, students will be able to:**

- |   |   |
|---|---|
| 1 | discuss ways that the content from this course can apply to their lives by referencing core concepts, perspectives, and/or theories examined in this course.  |
| 2 | demonstrate an understanding of perspectives, theories, and core concepts in Psychology.  |
| 3 | demonstrate an understanding of the way that the sciences in particular neuroscience describe the universe and the nature of scientific inquiry (scientific paradigms and methods).   |
| 4 | recognize and understand the impact and value of diversity on psychological research, theory, and application, including but not limited to: age, race, ethnicity, culture, gender, socioeconomic status, disability, and sexual orientation. |

**Course Objectives**

**Upon satisfactory completion of the course, students will be able to:**

- |    |  |
|----|--|
| 1  | define and use basic biological, physiological, and psychological terminology of the neurosciences.  |
| 2  | differentiate among specialty areas within Biological Psychology and the related disciplines within the Neurosciences and the types of research that characterize the biopsychosocial approach.  |
| 3  | summarize the major issues in human evolution, genetics, and behavioral development that underlie the "biology of behavior."   |
| 4  | generate and explicate concrete examples of invasive vs. noninvasive research methods and the general principles of research ethics for the study of animals and human beings, including the research safeguards and the peer-review process in science.                           |
| 5  | explain the scientific approaches used in methodologies for the study of brain-behavior relationships.   |
| 6  | explain the general anatomy and physiology of the nervous system and its relationship to behavior.   |
| 7  | describe neural conduction and synaptic transmission.  |
| 8  | discuss the role of the neuroendocrine system as it relates to behavior.   |
| 9  | exemplify with concrete examples various brain-behavior relationships including ingestive behavior, sleep, sexual development and behavior, stress, learning, memory, emotion, language, drug dependence, and psychiatric disorders such as affective disorders and schizophrenia. |
| 10 | explain neurochemical transmission and the neuroanatomical structures involved in the visual, auditory, chemical, endocrine, and sensorimotor systems.   |
| 11 | evaluate the effects of exogenous drugs on the nervous system and behavior.  |

**Course Content**

**Lecture/Course Content**

1. (10%) **Biological Psychology as a Course of Study**
  - a. history of the study of the brain's role in behavior
  - b. Research methods and ethical considerations of biological psychology and neuroscience, including invasive vs. non-invasive and research ethics applied to animals and humans

2. **(16%)The nervous system: anatomy, development and plasticity, and communication within the nervous system**

- a. cellular anatomy
- b. gross anatomy
- c. functional anatomy
- d. neural conduction
- e. synaptic communication

3. **(8%) Neuropharmacology**

- a. the effects of psychoactive drugs

4. **(22%) sensation, perception, and movement**

- a. sensory processing
- b. mechanisms of perception, conscious awareness, and attention
- c. the somatosensory system and pain
- d. the motor system and movement
- e. hearing, balance, taste, and smell
- f. vision

5. **(8%) Neural mechanisms of biological rhythms and sleep**

6. **(6%) Motivation and ingestive behavior; emotion and stress**

7. **(8%) Hormones, sexual development, and sexual behavior**

- a. the endocrine system
- b. sexual differentiation of biological structures and development of sexual orientation and gender identity

8. **(8%) Neural mechanisms of learning and memory**

9. **(6%) Language and cerebral lateralization**

10. **(8%) Biological bases of psychological disorders**

**Laboratory or Activity Content**

Not applicable.

## Methods of Evaluation

**Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):**

Written expression

**Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):**

Essay exams  
Group projects  
Individual projects  
Laboratory activities  
Objective exams  
Oral analysis/critiques  
Oral presentations  
Quizzes  
Reports/papers  
Research papers  
Role playing  
Simulations  
Written analyses  
Written homework  
Classroom Discussion  
Projects  
Participation  
Reports/Papers/Journals

## Instructional Methodology

**Specify the methods of instruction that may be employed in this course**

Audio-visual presentations  
Case studies  
Class activities

Class discussions  
Collaborative group work  
Computer-aided presentations  
Demonstrations  
Distance Education  
Field experience/internship  
Field trips  
Group discussions  
Guest speakers  
Instructor-guided interpretation and analysis  
Instructor-guided use of technology  
Internet research  
Laboratory activities  
Lecture  
Observation  
Role-playing  
Small group activities

**Describe specific examples of the methods the instructor will use:**

Instructor will use demonstrations, audio/visual presentations, class discussions, and small group activities to explain the course content. In addition, the instructor will model problem solving, and how to interpret and analyze research findings.

## **Representative Course Assignments**

### **Writing Assignments**

1. Design an original somatic or behavioral intervention (experiment) or correlational study to understand a particular brain-behavior relationship of interest using the scientific method.
2. Evaluate the findings (through scaffolded questions) of a peer-reviewed journal article describing a research study in behavioral neuroscience.

### **Critical Thinking Assignments**

1. Answer application and evaluation-level concept questions presented in lecture, such as "a person consumes benzodiazepines consistently. One day, they stop taking the drug, and a seizure results. Why could this occur? Explain using the terms GABA, agonist, tolerance, and down-regulation."
2. Analyze and synthesize concepts and problems in behavioral neuroscience such as, "evaluate the consequences of hippocampal damage on the consolidation of new memories versus the retrieval of previously consolidated memories, and differentiate the impact of hippocampal damage on declarative versus non-declarative memory."

### **Reading Assignments**

1. Read and study selected chapters from the textbook and the accompanying lecture notes, then answer questions or solve problems assigned by the instructor. An example would be: Read the chapter on the sensorimotor system, review the lecture notes, and then create a discussion post (or contribute to in-person small group discussion) where you identify a situation where you sensed without perceiving, and a situation where you perceived without sensing. Explain how you know you sensed without perceiving and vice versa, using the terminology related to sensory transduction, generator potentials, and attention/central modulation of sensory information.
2. Read the handouts provided by the instructor, such as a handout summarizing research evaluating the outcomes of instructor-created versus student-created study guides, as well as how to create an effective study guide. Then, practice the skill of creating a study guide for a particular topic in behavioral neuroscience.

## **Outside Assignments**

### **Representative Outside Assignments**

1. Research, using library resources, a particular topic in behavioral neuroscience going beyond the textbook and lecture information. An example could be: research the relationship between discrimination and the biological effects of stress. Determine the brain-behavioral variables involved.
2. Apply the concepts learned in lecture/reading to real-life situations, such as determining the neurological causes of patients presenting with behavioral changes, such as in the case of aphasia or loss of proprioception.

## **Articulation**

### **C-ID Descriptor Number**

PSY 150

**Status**

Approved

**Equivalent Courses at 4 year institutions**

University	Course ID	Course Title	Units
CSU Fresno	PSYCH 36	Biological Psychology	3
UC, Santa Barbara	PSYCH 3	The Biological Basis of Psychology	4
Cal Poly Pomona	PSY 2210	Mind, Brain, and Behavior: An Integrated View	3
CSU Channel Islands	BIOL 212	Neurobiology and Cognitive Science	3
CSU, Northridge	PSY 250	Physiological Correlates of Human Behavior	3

**Comparable Courses within the VCCCD**

PSY R105 - Introduction to Physiological Psychology

PSY V03 - Introduction to Biological Psychology

PSY M106H - Course PSY M106H not Found

**District General Education****A. Natural Sciences****A1. Biological Science**

Approved

**B. Social and Behavioral Sciences****C. Humanities****D. Language and Rationality****E. Health and Physical Education/Kinesiology****F. Ethnic Studies/Gender Studies****Course is CSU transferable**

Yes

**CSU Baccalaureate List effective term:**

F1998

**CSU GE-Breadth****Area A: English Language Communication and Critical Thinking****Area B: Scientific Inquiry and Quantitative Reasoning****B2 Life Science**

Approved



**Area C: Arts and Humanities**

**Area D: Social Sciences**

**Area E: Lifelong Learning and Self-Development**

**Area F: Ethnic Studies**

**CSU Graduation Requirement in U.S. History, Constitution and American Ideals:**

**UC TCA**

UC TCA  
Approved

**IGETC**

**Area 1: English Communication**

**Area 2A: Mathematical Concepts & Quantitative Reasoning**

**Area 3: Arts and Humanities**

**Area 4: Social and Behavioral Sciences**

**Area 5: Physical and Biological Sciences**

Area 5B: Biological Science  
Approved

**Area 6: Languages Other than English (LOTE)**

**Textbooks and Lab Manuals**

Resource Type  
Textbook

Classic Textbook  
No

Description  
Watson, Neil V. and S. Marc Breedlove. *The Mind's Machine: Foundations of Brain and Behavior*. 4th ed., Oxford University Press, 2021.

Resource Type  
Textbook

Classic Textbook  
No

Description  
Pinel, John P. J. and Steven J. Barnes. *Biopsychology*. 10th ed., Pearson, 2018.

Resource Type  
Textbook

Classic Textbook  
No

**Description**

Kalat, James. *Biological Psychology*. 13th ed., Cengage Learning, 2019.

**Library Resources****Assignments requiring library resources**

Research, using the Library's print and online resources, for written reports and term paper on topics appropriate to the course.

**Sufficient Library Resources exist**

Yes

**Example of Assignments Requiring Library Resources**

Using the Library's online databases, research the anatomical or functional brain differences in particular psychological disorders.

**Distance Education Addendum****Definitions****Distance Education Modalities**

Hybrid (1%–50% online)

Hybrid (51%–99% online)

100% online

**Faculty Certifications**

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

**Regular Effective/Substantive Contact****Hybrid (1%–50% online) Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Regular discussion boards will be used to encourage discussions amongst students where they can compare and contrast/discuss/analyze psychological topics involving such topics as research methodology in psychology, biological bases of mind and behavior, and environmental/social/cultural influences on mind and behavior.
E-mail	Instructor-to-student and student-to-instructor contact for clarification, questions, and student progress report
Face to Face (by student request; cannot be required)	Face-to-face meetings with students as needed by student request outside of classroom for clarification, questions, and student progress reports
Other DE (e.g., recorded lectures)	Internet websites, videos, recorded lectures, PowerPoint presentations, lecture notes
Synchronous Dialog (e.g., online chat)	Online office hours or online group discussions

**Video Conferencing**

One-on-one meetings with students by request for clarification, questions, and student progress reports. Instructor may be available on a certain day or days of the week within a certain time frame to help students and answer their questions via live video conferencing. This would be the equivalent of on-line office hours. Also, the instructor may choose to present a lecture to the students via video conferencing.

**Hybrid (51%–99% online) Modality:****Method of Instruction****Document typical activities or assignments for each method of instruction**

Asynchronous Dialog (e.g., discussion board)

Regular discussion boards will be used to encourage discussions amongst students where they can compare and contrast/discuss/analyze psychological topics involving such topics as research methodology in psychology, biological bases of mind and behavior, and environmental/social/cultural influences on mind and behavior.

E-mail

Instructor-to-student and student-to-instructor contact for clarification, questions, and student progress report

Face to Face (by student request; cannot be required)

Face-to-face meetings with students as needed by student request outside of classroom for clarification, questions, and student progress reports

Other DE (e.g., recorded lectures)

Internet websites, videos, recorded lectures, PowerPoint presentations, lecture notes

Asynchronous Dialog (e.g., discussion board)

Online office hours or online group discussions

Video Conferencing

One-on-one meetings with students by request for clarification, questions, and student progress reports. Instructor may be available on a certain day or days of the week within a certain time frame to help students and answer their questions via live video conferencing. This would be the equivalent of on-line office hours. Also, the instructor may choose to present a lecture to the students via video conferencing.

**100% online Modality:****Method of Instruction****Document typical activities or assignments for each method of instruction**

Asynchronous Dialog (e.g., discussion board)

Regular discussion boards will be used to encourage discussions amongst students where they can compare and contrast/discuss/analyze psychological topics involving such topics as research methodology in psychology, biological bases of mind and behavior, and environmental/social/cultural influences on mind and behavior.

E-mail

Instructor-to-student and student-to-instructor contact for clarification, questions, and student progress report

Face to Face (by student request; cannot be required)

Face-to-face meetings with students as needed by student request outside of classroom for clarification, questions, and student progress reports

Other DE (e.g., recorded lectures)

Internet websites, videos, recorded lectures, PowerPoint presentations, lecture notes

Asynchronous Dialog (e.g., discussion board)

Online office hours or online group discussions

Video Conferencing

One-on-one meetings with students by request for clarification, questions, and student progress reports. Instructor may be available on a certain day or days of the week within a certain time frame to help students and answer their questions via live video conferencing. This would be the equivalent of on-line office hours. Also, the instructor may choose to present a lecture to the students via video conferencing.

**Examinations****Hybrid (1%–50% online) Modality**

On campus

Online

**Hybrid (51%–99% online) Modality**

On campus

Online

**Primary Minimum Qualification**

PSYCHOLOGY

**Review and Approval Dates**

**Department Chair**

03/22/2021

**Dean**

03/23/2021

**Technical Review**

04/29/2021

**Curriculum Committee**

10/19/2021

**DTRW-I**

MM/DD/YYYY

**Curriculum Committee**

MM/DD/YYYY

**Board**

MM/DD/YYYY

**CCCCO**

10/28/2021

**Control Number**

CCC000426996

**DOE/accreditation approval date**

MM/DD/YYYY