**Multidisciplinary Studies Curriculum and Course Outline**

**Degree:** BA **Major:** MultidisciplinaryStudies  **Concentration:** Biopsychology for the Health Professions **Major Requirements:** 39 credit hours (plus 9 credit hours of related coursework)

Core 2 (15 credit hours)

Psychology

Core 1 (20 credit hours)

Biochemistry

PSYC 100 General Psychology

PSYC 211 Statistics and Experimental Design 1

PSYC 215 Intro to Physiological Psychology

PSYC 356 Health Psychology

PSYC 2X2 Intro Counseling/Psychotherapy

PSYC 3X3 Culture, Ethnicity, & Diversity

BIOL 211 Concepts of Zoology

BIOL 254 Human Anatomy and Physiology 1

BIOL 362 Cell and Developmental Biology

CHEM 231 Organic Chemistry 1

CHEM 232 Organic Chemistry 2

Capstone (3-12 credit hours)

Relative Elective Courses (9 credit hours)

MATH 101 College Algebra

PHYS 131 Physics 1 with Algebra

EDFN 2X1 Educational Psychology

BIOL 300 Co-op Experience in Biology

**Course Descriptions**

**Core One Descriptions:**

**BIOL 211:**  **4 s.h.** **Concepts of Zoology**  **(G2)**: Study of invertebrate and vertebrate animals. Classification, reproduction, development, ecology, physiology, behavior, genetics, scientific methodology (including simple statistical approaches), and evolution. Laboratory studies include microscopy, dissections, live observations, computer exercises and experimentation. 3 hrs. lec., 3 hrs. lab. Prereq: [BIOL 101](https://catalog.millersville.edu/search/?P=BIOL%20101) or [BIOL 100](https://catalog.millersville.edu/search/?P=BIOL%20100) with a grade of C- or higher for non-majors; B- or higher in [BIOL 100](https://catalog.millersville.edu/search/?P=BIOL%20100) for biology majors.

**BIOL 254:**  **4 s.h.** **Human Anatomy & Physiology I**: Study of the structure and function of the human body. This first semester of a two-semester sequence deals with the development, histology, gross anatomy, function and pathophysiology of the cutaneous, skeletal, muscular and nervous systems. 3 hrs. lec., 3 hrs. lab. Offered in fall. Prereq: [BIOL 100](https://catalog.millersville.edu/search/?P=BIOL%20100) or [BIOL 101](https://catalog.millersville.edu/search/?P=BIOL%20101).

**BIOL 362:**  **4 s.h.**  **Cell and Developmental Biology**  **(G2, W)**: Cell structure and function, including cell ultrastructure, methods used in cell biology research, cell motility, signal transduction, cell division, macromolecules, metabolism and the cytomembrane system. Basic concepts in developmental biology are also covered: fertilization, early embryonic cleavage in model systems, cell-cell communication, extracellular matrix and research methods. Examples from developmental biology are employed to illustrate the functions and roles of cellular structures and processes. Laboratory includes isolation of cell components, fertilization and cleavage in sea urchins, microscopy and other techniques used in the study of cell and developmental biology. 3 hrs. lec., 3 hrs. lab. Offered in fall and spring. Prereq: [BIOL 101](https://catalog.millersville.edu/search/?P=BIOL%20101) or [100](https://catalog.millersville.edu/search/?P=BIOL%20100) with a grade of C- or higher; B- or higher in [BIOL 100](https://catalog.millersville.edu/search/?P=BIOL%20100) for biology majors; [ENGL 110](https://catalog.millersville.edu/search/?P=ENGL%20110); [CHEM 112](https://catalog.millersville.edu/search/?P=CHEM%20112) (Prereq or Coreq).

**CHEM 231:**  **4 s.h.** **Organic Chemistry 1** (**G2)**: Organic structural theory, including conformations and configurations of molecules and functional group classification of organic compoundsalkanes, alkenes, alcohols, ethers, alkyl halides, aldehydes and ketones, and aromatic and organometallic compounds. Major emphasis on relationships among molecular structure, chemical reactivity, and physical properties. Thorough integration of reaction mechanisms as elucidated using principles of kinetics, thermodynamics, stereochemistry, and spectroscopy. Introduction to the instrumentation of organic chemistry: proton and carbon-13 NMR, infrared and mass spectrometry. 3 hrs. lec., 3 hrs. lab. Prereq: [CHEM 112](https://catalog.millersville.edu/search/?P=CHEM%20112) with a grade of C- or higher; C for chemistry majors.

**CHEM 232:**  **4 s.h.** **Organic Chemistry 2**  **(G2)**: The structure-property-reactivity-mechanism-synthesis approach from [CHEM 231](https://catalog.millersville.edu/search/?P=CHEM%20231) continues with application to, and/or emphasis on, unsaturated compounds-alkynes, dienes and aromatic compounds. Also, carbonyl compounds, including carboxylic acids and derivatives, along with amines, phenols, and complex compounds with multiple functionality. Introduction to natural and synthetic polymers; biomolecules, including fats, oils, amino acids and carbohydrates, along with the basic reactions of metabolism. Thorough integration of structural relationships to spectral properties using UV, IR, C-13 and H-1 NMR, and mass spectral instrumentation and derived data. 3 hrs. lec., 3 hrs. lab. Prereq: [CHEM 231](https://catalog.millersville.edu/search/?P=CHEM%20231) with a grade of C- or higher.

**Core Two Descriptions:**

**PSYC 100:**  **3 s.h.** **General Psychology** (**G3)**: An introduction to the study of behavior and mental activity, including such aspects as motivation, emotions, sensation and perception, individual differences, the nervous system, learning and personality with a view of understanding behavior.

**PSYC 215:**  **3 s.h.** **Intro to Physiological Psychology**: Serves as an introduction to the nervous systemin relation to cognition and behavior. It will begin at the cellular level, building up to the systems level. Offered fall, spring. Prereq: BPE 100 or BIO 100 or 101 and [PSYC 100](https://catalog.millersville.edu/search/?P=PSYC%20100).

**PSYC 356:**  **3 s.h.** **Health Psychology**: A review of research and theory linking psychological factors to health. Discussion of psychosocial aspects of health behavior, pain, stress and the impact on biological systems. Evaluation of psychological and behavior interventions for health behavior change and chronic illness. Offered in fall. Prereq: [PSYC 100](https://catalog.millersville.edu/search/?P=PSYC%20100) and [PSYC 227](https://catalog.millersville.edu/search/?P=PSYC%20227) or [228](https://catalog.millersville.edu/search/?P=PSYC%20228) or [229](https://catalog.millersville.edu/search/?P=PSYC%20229) or [234](https://catalog.millersville.edu/search/?P=PSYC%20234) or [256](https://catalog.millersville.edu/search/?P=PSYC%20256).

**PSYC 2X2: Intro to Counseling/Psychotherapy (Transfer course):** This course introduces learners to a variety of mental health disciplines and settings and presents and overview of the diverse populations with which the disciplines work. Learners build a working knowledge of the communication and psychotherapy skills used in current professional mental health practices, such as addictions counseling, marriage, and family therapy, individual counseling, and college counseling. Learners also apply knowledge of psychotherapeutic methods and research findings to problems in living.

**PSYC 3X3: Culture, Ethnicity, and Diversity (Transfer course):** In this course, learners integrate their knowledge of theories and research of culture, ethnicity, diversity, and social interaction with current trends and challenges associated with cultural diversity. Learners analyze social issues related to gender, age, race, religion, sexual orientation, and mental and physical disability and assess the effects of prejudice, discrimination, and institutional racism.

**Related Elective Courses:**

**MATH 101:** **3-5 s.h.** **College Algebra**: For students who need to improve their algebraic skills before taking a higher-level course such as [MATH 151](https://catalog.millersville.edu/search/?P=MATH%20151), [160](https://catalog.millersville.edu/search/?P=MATH%20160) or [161](https://catalog.millersville.edu/search/?P=MATH%20161); focuses on algebraic topics needed for success in college mathematics and its applications. Includes the real number system, linear equations and inequalities, word problems, polynomials and factoring, rational algebraic expressions, exponents and radicals, quadratic equations, irrational equations, graphs of equations, systems of equations and logarithmic and exponential functions. Prereq: high school algebra I, II and geometry; math placement testing/ evaluation before registration.

**PHYS 131:** **4 s.h.** **Physics 1 with Algebra** (**G2)**: An introductory algebra-based course. Fundamental laws and properties of matter, mechanics, and heat. Problems dealing with these laws. 3 hrs. lec., 1 hr. recitation and 2 hrs. lab. Prereq: [MATH 101](https://catalog.millersville.edu/search/?P=MATH%20101) or MPT score sufficient for the student to enroll in MATH courses above [MATH 110](https://catalog.millersville.edu/search/?P=MATH%20110). Offered fall, summer.

**EDFN 2X1: Educational Psychology (Transfer course):** Learners in this course gain knowledge of and explain psychology theories and research as applied to development and learning in educational contexts, including behavioral, cognitive, and constructivist theories. Learners analyze the role of motivation in learning, and through a case study and practice approach, apply their knowledge in educational settings.

**Capstone Course:**

**BIOL 300** **3-12 s.h.** **Co-Op Ed Experience in Biol:**

Co-Op Ed Experience in Biology