Miami Dade College

Course Description

EDF2144 | Maximizing Student Potential in the School Context | 3.00 credits

This course explores learning and development in educational settings and examines neuroscience-based strategies that enhance learning potential from infancy through adolescence. Students will study practical applications of these strategies in the classroom, including methods for creating effective learning environments and implementing evidence-based practices that support cognitive and emotional development. The curriculum will also investigate the implications of brain research for instruction and teaching practices, providing students with a scientific foundation for understanding educational processes.

Course Competencies

Competency 1: The student will explain the anatomical structure of the brain and the relationship between specific areas of the brain and various cognitive functions by:

1. Identify and explain major brain functions.
2. Identify key structures in the brain involved in learning.
3. Describing the functions of key brain structures in the learning process.
4. Defining neuroscience education.
5. Explaining how different parts of the brain work together to support learning.
6. Describing various cognitive functions such as memory, attention, and problem-solving.
7. Analyzing how cognitive functions influence the learning process.

Competency 2: The student will analyze the changes in the brain from infancy to adolescence influencing brain health and learning by:

1. Identifying and describing the stages of brain development from infancy to adolescence.
2. Explaining how factors like nutrition, sleep, exercise, and substance abuse affect brain health.
3. Describing how brain development impacts cognitive processes related to learning.
4. Defining and describing executive function.
5. Explaining how brain development influence's executive function.
6. Describing the concepts of long-term potentiation, neuroplasticity, and their relevance to cognitive development and memory retention.
7. Analyzing the connection between executive function development and academic performance.

Competency 3: The student will recognize diverse brain characteristics, with an emphasis on considering exceptionalities, multilingualism, gender differences, intelligence quotient (IQ), and their impact on learning and development by:

1. Identifying diverse brain characteristics and their implications on learning.
2. Defining neurodivergent and the impact of research-based practices in learning.
3. Exploring the benefits of multilingualism on brain development.
4. Identifying cultural influences on cognition that lead to improved academic performance and valuing diverse linguistic and cultural backgrounds of students.
5. Discussing how gender impacts learning and brain development and analyze research on this topic to critically evaluate its implications in educational settings.
6. Discussing intelligence quotient (IQ) and its role in learning.
7. Explaining how brain differences influence the adoption of research-based learning strategies.

Competency 4: The student will examine the impact of environmental factors on brain development by:

1. Exploring the impact of environmental factors, neuroplasticity, and brain development.
2. Identifying the importance of a nurturing environment in supporting healthy brain development.
3. Analyzing different environmental factors (e.g., nutrition, exposure to toxins, etc.) That can impact brain development and propose strategies to support healthy brain development.
4. Identifying the impact of socioeconomic status on brain development and learning outcomes.

5. Identifying the effects of trauma on the developing brain and its implications for learning.
6. Identifying how stress influences neural pathways and learning abilities.
7. Examining the impact of generational influences on learning patterns and brain functions.

Competency 5: The student will examine the impact of emotions and relationships on brain development and learning by:

1. Exploring brain anatomy and functions in relation to cognitive processes and emotional regulation.
2. Defining a growth mindset and developing strategies to help students foster a growth mindset by embracing challenges and setbacks as opportunities for learning and improvement.
3. Identifying strategies to help students develop social and emotional intelligence through self-awareness, self- regulation, and relationship-building.
4. Identifying neuroscience education teaching strategies to enhance student learning experiences, create supportive classroom environments, motivate students' learning, and improve academic performance.
5. Exploring the importance of collaborative relationships with families in supporting students' cognitive growth.
6. Identifying effective communication and collaboration strategies for use with families in supporting students' cognitive development.

Competency 6: The student will explore the development of the brain, focusing on the critical role of building readers' brains and fostering strong family partnerships by:

1. Identifying the characteristics and impact on reading and language development of neurodivergent readers (e.g. Dyslexia).
2. Analyzing the stages of brain development from infancy and their impact on literacy skills.
3. Identifying the critical periods for language development and literacy acquisition.
4. Identifying and analyzing the role of phonology, morphology, syntax, and semantics in oral communication.
5. Exploring literacy activities that involve and empower families in the learning process.
6. Analyzing the role of family partnerships in promoting literacy skills in children and adolescents.

Learning Outcomes:

1. Communicate effectively using listening, speaking, reading, and writing skills.
2. Solve problems using critical and creative thinking and scientific reasoning.
3. Demonstrate knowledge of ethical thinking and its application to issues in society.
4. Use computers and emerging technologies effectively.
5. Formulate strategies to locate, evaluate, and apply information.