



Course Description

EDF4991 | Brain-Based Teaching: Reading and the Brain | 3.00 credits

The student will learn how the brain processes information and acquires the ability to read. The student will apply educational neuroscience and research-based pedagogy to the instruction of P-12 content areas.

Course Competencies:

Competency 1: Students will be able to explain the parts of the brain and their functions as they relate to the teaching and learning process by:

1. Describing the basic anatomy and functions of parts of the brain involved in learning and emotions
2. Identifying the role and importance of neurotransmitters in the learning process
3. Discussing how neuroplasticity impacts the acquisition of new information
4. Examining how emotions impact learning (ex: Positive Psychology as it relates to optimism, empathy, stress, and anxiety)
5. Explaining the interrelationship between cognitive and social-emotional domains in the learning process

Competency 2: Students will be able to examine educational neuroscience, cognitive research and their applications to the teaching and learning of reading by:

1. Comparing and contrasting the phonics, whole language, and blended approaches to reading instruction
2. Defining reading as a complex task that requires the development, coordination, and interconnection of multiple skills and areas of the brain
3. Explaining common neurologically-based reading challenges (e.g., dyslexia, etc.)
4. Identifying cognitive targets and the role of cognitive development in the construction of meaning
5. Understanding how knowledge is created, produced, and sequenced in different content areas/disciplines (e.g., math, social studies, science, language arts)
6. Comparing and contrasting the literacy needs of ELL, gifted, and students with disabilities in content areas/disciplines

Competency 3: Students will apply findings of educational neuroscience and cognitive research in reading by:

1. Infusing instructional practices for scaffolding reading development that apply educational neuroscience and cognitive research findings and supports the development of higher-order thinking (e.g., discovering and formalizing patterns, balanced approach)
2. Modeling reading strategies and activities that students can use to foster metacognition through self-correcting and self-monitoring skills
3. Modeling reading strategies and activities to address the different learning profiles and needs of all students (e.g., gender, SES, ELL, students with disabilities, gifted, etc.)

Competency 4: Students will develop a repertoire of relevant literacy practices that reflect current educational neuroscience and cognitive research, and addresses reading in different content areas/disciplines by:

1. Comparing and contrasting literacy strategies that facilitate and promote comprehension of content area text
2. Identifying "real world" literacy needs required for content areas/disciplines
3. Integrating "real world" literacy materials into content areas/disciplines lessons
4. Differentiating reading instruction in the content area to ensure that all students access the curriculum
5. Identifying educational neuroscience and cognitive research practices in literacy for families to support home learning

Competency 5: Students will be able to examine assessment practices that infuse educational neuroscience and cognitive research into content area literacy by:

1. Discerning whether formative and summative assessments are grounded in educational neuroscience and cognitive research-based best practices
2. Developing formative and summative content area literacy assessments that align with educational neuroscience and cognitive research
3. Creating opportunities for students to evaluate their own literacy skills through self-assessment practices
4. Utilizing reading assessment data to promote the academic achievement of a diverse population of learners
5. Utilizing assessment data and literacy strategies to meet the needs of diverse learners in content area literacy

Learning Outcomes:

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information
- Demonstrate knowledge of diverse cultures including global and historical perspectives
- Create strategies that can be used to fulfill personal, civic, and social responsibilities
- Demonstrate knowledge of ethical thinking and its application to issues in society
- Describe how natural systems function and recognize the impact of humans on the environment