**Course Title:** Lessons from the infant brain: variable behavior drives experience-dependent plasticity and connectivity across the lifespan

**Course Speakers:** Kristin Krosschell, DPT; Theresa Sukal-Moulton, PhD; Colleen Peyton, DPT

**Course description:** The earliest movements seen in both the fetus and infant are individualized, diverse and complex. Children are flexible thinkers and variable movers. With age this variability may be narrowed in favor of efficiency as motor learning reduces system redundancy while fostering strategic problem solving and use of additional degrees of freedom. Environmental influences and neurological factors can significantly contribute to or restrict skill acquisition and motor development. In this course, we will explore why variability in human behavior is essential to survival and learning, and how movement disorders can impact this variability. The lessons learned from early infancy and childhood can be applied to physical therapy treatment and assessment across the lifespan into adulthood. We will demonstrate principles in a number of diagnoses and review video examples of cases to discuss treatment strategies that incorporate principles of variability.

**Course Objectives:**
Learner will:

1. Understand the role that variability of motor experience and the environment plays in human development
2. Explain the impact of motor experience on structures and functions of the brain, and how changes in the structure of the brain due to injury will impact the movement experience
3. Explain role of neuroplasticity in impaired and intact nervous systems in the developing brain and how this can be applied in targeted treatment sessions
4. Translate concepts of variable environments to scenarios and cases from learner’s experience
5. Apply multiple strategies to improve performance in patient care for patients with a variety of diagnoses (musculoskeletal, neurological, cardiovascular).

**Course Level:** Multiple level course