**ED.855 (Research and Doctoral Programs)**

**ED.855.702. Causal Inference When Regression Fails. 3 Credits.**
This course introduces strategies for estimating causal effects from a counterfactual perspective when conditioning techniques, such as matching and regression, do not identify the parameter of interest. After a review of scenarios when such conditioning will fail, the course then presents intervention designs, explaining randomization from both a potential outcome and causal graph perspective. The challenges to implementation of these designs are then discussed, with a special focus on large-scale randomized trials in education research. The course then considers the most prominent designs for causal inference in observational research in the presence of troubling unobservables: instrumental variable estimators, pre-post longitudinal designs, regression discontinuity, and estimation via exhaustive mechanisms. The course concludes with a consideration of credible avenues for investigation when point identification cannot be achieved, including an analysis of bounds and the estimation of a provisional estimate followed by a sensitivity analysis.

**ED.855.752. Trends, Principles, and Practices of 21st Century Learning. 3 Credits.**
This course explores pedagogical shifts in education that have arisen as a result of the integration of advanced digital tools and considers how these shifts and tools impact leadership, organization, instructional delivery, and student learning in today's schools. Participants learn essential principles and practices for building 21st century content and technology-rich learning environments for all students including those with disabilities and other special needs.

**ED.855.753. Digital Age Technology and Instruction. 3 Credits.**
This course provides opportunities for participants to explore integration of technology within the K-16 classroom environment. First, students will examine barriers to technology integration in the K-16 context with implications for professional development. Students will examine theoretical perspectives and research to investigate the advantages and challenges of effectively integrating technology to support learning. Specifically, students will be engaged in critically examining “evaluation practices” related to effective application of digital technology in the classroom from an informed theoretical, empirical, and pedagogical perspectives. Examples from research that examines evaluation practices can be related to classroom connectivity technology, mobile technologies, one-to-one computing, and video use. Participants will also be engaged in considering measurement to examine the effectiveness of the technology integration in instruction and gauge the capacity of their school organization in implementing digital age technology successfully. Participants draw upon relevant instructional theories, conceptual frameworks, and effective best practices as criteria for selection, implementation, and integration of technology.

**ED.855.806. Academic Writing. 3 Credits.**
Doctoral students face a variety of writing tasks at all levels as they work toward their academic goals. It is critical for graduate students to have writing skills to effectively convey their ideas to different types of audience and to achieve their goals as a researcher. This course will offer an introduction to a wide range of scientific writing and will provide an overview of important features of academic writing. We will primarily focus on academic writing tasks that may be required in the earlier stages of an academic career.

**ED.855.807. Career Development and Academic Writing. 1 Credit.**
What is the next step? Doctoral students face a variety of career development stages as they work toward their professional goals. This course will cover a wide range of topics related to Ph.D. students' career development, including the university and non-university job market, research and teaching portfolios, CV and resume, job interview skills, networking, and negotiating tips. Furthermore, it is critical for graduate students to have writing skills to effectively convey their ideas to different types of audiences and to achieve their goals as a researcher. This course will also offer an introduction to scientific writing and will provide an overview of important features of academic writing. We will primarily focus on academic writing tasks that may be required in the earlier stages of an academic career. This course will help students to feel prepared for their career and to accomplish their professional goals.

**ED.855.825. Human Development from Educational Psychology Perspectives. 3 Credits.**
This course will provide an overview of major concepts, theories, and psychological research related to human development, primarily from birth to the transition to adulthood. This will include discussions of developmental milestones, individual functioning, human learning, motivation, cognitive and social-emotional development, and environmental influences. In addition, we will discuss the application of psychological principles to educational research and practice.