Science Math Education

**SMED 5301** Science, Mathematics, and Society (3 semester credit hours) Exploration of the state of the world as informed by STEM issues in society. Students make connections to global STEM topics as they explore the importance of universal citizen involvement in the learning, teaching, and application of science and mathematics. International topics include current research into sustainability, development, climate change, security, resources, and innovation. (3-0) Y

**SMED 5302** Teaching and Learning of Science and Mathematics (3 semester credit hours) Includes the history of science and mathematics education with emphasis on the continuing struggle to improve classroom practice. Learning theories are explored with a focus on cognitive studies and application in the classroom. The importance of learning environments, problem solving and assessment strategies are also emphasized. Teaching strategies and the research behind those strategies will be evaluated. (3-0) Y

**SMED 5303** Introduction to Research and Evaluation in Science and Mathematics Education (3 semester credit hours) Expansion of students’ knowledge and application of STEM education research including research approaches to evaluation of curricula and student achievement. Focus on designing research questions concerning current understanding in science and mathematics education and questions for future investigations. For the major project, students explore the appropriateness of action research in answering practical questions. Prerequisite: **SMED 5302**. (3-0) Y

**SMED 5304** Research Methods in Science and Mathematics (3 semester credit hours) Open-ended, inquiry projects grounded in critical and logical thinking that involve observations, research, investigation planning, data collection with instruments or surveys, analysis and interpretation of data, proposing explanations, considering alternatives, generating predictions, and conveying results in student peer-reviewed papers and presentations appropriate for a professional forum. Students conduct open-ended research into subjects of their choosing. Students develop and pursue inquiries based on original ideas, literature research, discussions with experts, and via trial and error. Recommended Prerequisite: **SMED 5303**. (3-0) Y

**SMED 6V98** Thesis Research (3-6 semester credit hours) Thesis development. May be repeated for credit (9 semester credit hours maximum). Only 6 semester credit hours may apply for credit toward the Master of Arts in Teaching (MAT). Instructor consent required. ([3-6]-0) R