MUSICAL THEATRE (MST)

MST 600 - Investigative Math, Science, and Technology for Educators: Energy (3.0 hours)
Investigative Math, Science, and Technology for Educators: Energy
Prerequisite: Graduate student standing; satisfactory score on pretest or suitable remediation

MST 601 - Investigative Math, Science, and Technology for Educators: Motion (3.0 hours)
Investigative Math, Science, and Technololgy for Educators: Motion
Prerequisite: Graduate student standing; satisfactory score on pretest or suitable remediation

MST 609 - Investigative Math, Science, and Technology for Educators: Special Topics (3.0 hours)
Investigative Math, Science, and Technology for Educators: Special Topics
Prerequisite: Graduate student standing; satisfactory score on pretest or suitable remediation

MST 610 - Math Through Inquiry (3.0 hours)
Math Through Inquiry
Prerequisite: GRADUATE STUDENT STANDING; SATISFACTORY SCORE ON PRETEST OR SUITABLE REMEDIATION

MST 611 - Directed Research in Science and Math Internship (1.0 hour)
Directed Research in Science and Math Internship
Prerequisite: GRADUATE STUDENT STANDING

MST 612 - Introduction to Teacher Leadership (1.0 hour)
Introduction to Teacher Leadership
Prerequisite: GRADUATE STUDENT STANDING

MST 615 - Introduction to the Interdisciplinary Nature of Environmental Science (3.0 hours)
Introduces students to environmental science and the need to integrate across disciplines to understand and correct environmental problems. Students will participate in an interactive group-based course that delves into environmental problems and the science, resources, and sills needed to understand and solve them.

MST 616 - The Mathematics of Environmental Science (3.0 hours)
An introduction to mathematical modeling with applications to environmental science. Topics to be covered include elementary applications of mathematics in environmental science; the qualitative and quantitative theory of differential equations of functions of a single variable; the differential calculus of functions of several variables, optimization, and applications of the preceding to environmental systems.
Prerequisite: College-level calculus.

MST 620 - Topics in Investigative Math, Science, & Technology For Educators II: Evolution (3.0 hours)
Course integrating math, science, and technology in an investigative format. Emphasis on using scientific methods to explore thematic material. Course taught in an inquiry-based, investigative format that includes application to pre K-12 classrooms. Second course of a two-course sequence. Course content is integrated along the theme of evolution.
Prerequisite: B or better in one course from MST 600-609, or graduate student standing and consent of instructor.

MST 621 - Investigative Math, Science, & Tech. for Educators: Environmental Science (3.0 hours)
Course integrating math, science, and technology in an investigative format. Emphasis on using scientific methods to explore thematic material. Course taught in an inquiry-based, investigative format that includes application to pre K-12 classrooms. Second course of a two-course sequence. Course content is integrated along the theme of environmental science.
Prerequisite: B or better in one course from MST 600-609, or graduate student standing and consent of instructor.

MST 629 - Investigative Math, Science, & Tech. for Educators: Special Topics (3.0 hours)
Course integrating math, science, and technology in an investigative format. Emphasis on using scientific methods to explore thematic material. Course taught in an inquiry-based, investigative format that includes application to pre K-12 classrooms. Second course of a two-course sequence. Course content is integrated along a rotating theme.
Prerequisite: B or better in one course from MST 600-609, or graduate student standing and consent of instructor.

MST 630 - Teaching Science Using Robotics Platforms (3.0 hours)
Robot building activities designed to teach key technology and science concepts. Addresses the concepts of programming, behaviors, systems, control, sensors, and feedback with an introduction to artificial intelligence as it relates to robotics, the impact of robotics technology on society, and futuristic trends.
Prerequisite: B or better in one course from MST 600-609, or graduate student standing and consent of instructor.

MST 631 - The Science of Foods and Nutrition (3.0 hours)
Application of chemical and biological principles to food and nutrition
Prerequisite: B or better in one course from MST 600-609, or graduate student standing and consent of instructor.

MST 632 - The Science of Matter (3.0 hours)
Properties and selection of materials for engineering and medical applications. Developments and application of allows, polymers, ceramics, and composite materials. Interactions with the environment. Recent advances in nanotechnology, and application of synthetic and natural materials in medicine. An inquiry-based course with numerous easy-to-perform workshops. Active participation of the students in developing workshops is aimed at enhancing leadership skills. Small team groups conduct research and develop workshops.
Prerequisite: B or better in one course from MST 600-699, or graduate student standing and consent of instructor.

MST 633 - Pharmacology and the Human Brain (3.0 hours)
Drug use and abuse will be explored from psychological, biological, sociological, and clinical perspectives. Students will gain an understanding of the history of drug use and drug policy and will be encouraged to identify sociological factors that promote abuse and incarceration. Students will be introduced to basic pharmacological principles, gross brain anatomy, and the neurobiology of drug action. Theories of addiction and contemporary treatment paradigms will be explored. Includes laboratory component.
Prerequisite: B or better in one course from MST 600-609, or graduate student standing and consent of instructor.

MST 634 - Crime Scene Science (3.0 hours)
Application of interdisciplinary, inquiry-based, fundamental scientific principles to solve simulated problems within the theme of forensic science. A lab component is included.
Prerequisite: B or better in one course from MST 600-609 or graduate student standing and consent of instructor.

MST 635 - The Science of Global Climate Change (2.0-3.0 hours)
Focuses on the global climate change with particular attention to the global heat budget, its interactions with other factors such as greenhouse gasses and anthropogenic alterations to global systems. Instructors will cover basic atmospheric and terrestrial science (biology, geology, chemistry, physics, and mathematics) necessary to understand the problem. The consequences of global climate change on society (commerce, international relationships, policy, and national security) will then be discussed.
Prerequisite: B or better in one course from MST 601-609 or MST 620-629, or graduate student standing and consent of instructor.

MST 636 - The Science of Computer Games (3.0 hours)
Computer gaming, its current uses, and societal impact will be comprehensively explored. Participants will learn rudimentary programming skills needed to develop a basic educational game, evaluate online gaming sites and stand-alone game boxes, review demographics of current gamers, identify the resources (software, hardware, and personnel) needed to create games and run online gaming sites. Participants will also evaluate the gaming industry and its business models for successful game development, become familiar with related computer laws and oversight committees from around the world, review current issues and concerns with games, and look at future gaming trends.
Prerequisite: B or better in one course from MST 600-609, or graduate student standing and consent of instructor.

MST 637 - Scientific Myths and Misconceptions (2.0-3.0 hours)
Inquiry-based approach to investigating common myths or popular beliefs using principles of mathematics and sciences.
Prerequisite: B or better in one course from MST 601-609 or MST 620-629, or graduate student standing and consent of instructor.

MST 639 - Special Topics (1.0-3.0 hours)
Inquiry-based exploration of science and mathematics content organized around a central theme. Topics will vary by instructor. May be repeated under different topics for a total of 6 credit hours.
Prerequisite: B or better in one course from MST 600-609, or graduate student standing and consent of instructor.

MST 640 - Water: The Human Perspective (2.0 hours)
Focuses on water as a compound that is absolutely essential to our environment. Instructors will cover aspects of biology, geology, chemistry, physics, and mathematics necessary to understand the properties of water and their application. The consequences of the interaction between water, humans, and the rest of the environment (commerce, international relationships, policy, national security) will then be discussed.
Prerequisite: B or better in one course from MST 601-609 or 620-629, or graduate student standing and consent of instructor.

MST 641 - Nanotechnology in the 21st Century (2.0 hours)
Focuses upon nanotechnology, from the fundamental science behind the field to applications which it attempts to address. Emphasis will be placed on different methods of preparation of nanoparticles and structures, how they are imaged and analyzed, and their applications and impact on our society. Basic physics and chemistry necessary to study nanoscience will also be covered early in the course. A laboratory experience will also expose students to actual preparation and analysis techniques.
Prerequisite: B or better in one course from MST 601-609 or 620-629, or graduate student standing and consent of instructor.

MST 650 - Inquiry-Based Curriculum: Developement & Analysis (3.0 hours)
Inquiry-Based Curriculum: Developement & Analysis
Prerequisite: B or better in one course from MST 600-609

MST 660 - Research in Math and Science (2.0 hours)
Research in Math and Science
Prerequisite: Graduate standing and B or better in MST 511

MST 661 - Directed Research in Environmental Science (1.0 hour)
Students work with a faculty member from a STEM discipline in a guided research internship.
Prerequisite: Graduate student standing.

MST 662 - Research in Environmental Science (2.0 hours)
Students work with a faculty member from an MST discipline on a collaborative research project.
Prerequisite: Graduate standing and a B or better in MST 661 or permission of the instructor.

MST 665 - Environmental Systems I (2.0 hours)
Descriptions of ecosystems form and function with focus on biogeochemistry, food webs and energy transformations within natural systems. Emphasis on application of ecosystem principles to sustainable land management and current issues such as global change and nitrogen deposition.
Prerequisite: B or better in one course from MST 601-609 or 620-629, or graduate student standing and consent of instructor.

MST 666 - Environmental Systems II (2.0 hours)
Description of ecosystem form and function with focus on the interactions and interdependence of Earth's biotic and abiotic systems. Focus will include role of disturbance in placement and distribution of those species and their relatedness to their specific environment. Focus on impacts of interactions with and perturbations to systems, including those that result from anthropogenic disturbance.
Prerequisite: MST 665 Environmental Systems I

MST 670 - Action Research: Methods and Practice (1.0-3.0 hours)
Focus on the methods of action research that lead to teachers answering questions about classroom practice with a goal of improving student performance.
Prerequisite: Graduate Standing

MST 680 - Nature of Inquiry and Innovation (3.0 hours)
Survey of innovations across the sciences and mathematics within a historical and cultural perspective. Comparison of modes of inquiry that lead to these innovations with processes of discovery used in the social sciences and the humanities.
Prerequisite: B or better in MST 650.

MST 681 - Advanced Teacher Leadership (2.0 hours)
Concepts of shared school leadership designed to develop leadership in teachers who continue to teach students but also have an influence extending beyond the classroom within the school and elsewhere.
Prerequisite: B or better in MST 612.

MST 685 - Stem Education Project (1.0-4.0 hours)
Capstone course to enhance STEM content knowledge while integrating concepts from inquiry-based teaching and learning, action research, and teacher leadership.
Prerequisite: Graduate standing in an appropriate MPS program; grade of B or better in MST 660 and MST 670.

MST 686 - Environmental Sciences Research Project (1.0-3.0 hours)
Capstone course to enhance STEM content knowledge while integrating concepts of research in environmental science and teacher leadership.
Prerequisite: B or better in MST 661.

MST 690 - Continuation in MST Program (0.0 hours)
This non-credit course allows for continuous active enrollment in MST degree programs while students are completing one or more courses that spans multiple terms and are not otherwise registered for credit-bearing courses. Successful completion of the course(s) in progress will result in satisfactory completion of MST 690. S/U.
Prerequisite: Active standing in MST program