

## MAT-SE Course Schedule and Descriptions



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## Tentative Course Schedule:

Course	Title	Institution	Su '07	Fall '07	Sp '08	Su '08
<b>Core</b>						
SCE 5301	Critical Issues in Science Education	UT Dallas	X			X
SCE 5305	Evaluating Research in Science Education	UT Dallas		X		
SCE 5308	Research Design and Methodology for Science Educators	UT Dallas			X	
SCE 8398	Science Education Thesis	UT Dallas				X
<b>Content</b>						
SCI 5325	Integrated Physical Science for Teachers	UT Dallas		X		
SCI 5325	Integrated Earth Science for Teachers	UT Dallas			X	
SCI 5325	Integrated Life Science for Teachers	UT Dallas				X
<b>Elective</b>						
SCE 5v06	Special Topics: Lessons Learned from Leading Researchers	UT Dallas	X			
SCE 5v06	Special Topics: Independent Study in Science Education	UT Dallas		X	X	X
SCI 5v06	Special Topics: Independent Study in Science	UT Dallas		X	X	X
SCI 5v06	Special Topics: Age of Dinosaurs	UT Dallas		X		
ED 5320	Educational Technology	UT Dallas		X	X	
SCI 5322	Basis of Evolution	UT Dallas			X	
SCI 5330	Stella Modeling	UT Dallas				X

## Course Descriptions:

## Core:

**SCE 5301 Critical Issues in Science Education** (3 semester hours) Examination of classic issues in science and technology and the relationships developed between them. Topics include population and population growth, food and food sources, energy and energy sources, water needs/solutions, diseases and cures, housing – safe and adequate, environmental issues – personal and political, and security – local and global. [Additional Course and Faculty Information](#)

**SCE 5305 Evaluating Research in Science Education** (3 semester hours) Examination of selected topics in the methodological and philosophical foundations of science education as applied to contemporary issues affecting today's students. Topics include current research on

hands-on/inquiry teaching, concept mapping, student misconceptions, learning/teaching styles, alternative assessment, gender differences, learning environments, action research, and knowledge transfer to provide a context for the history of science literacy and educational literacy; quantitative and qualitative research methods; and professional writing techniques.

**Prerequisite:** one semester teaching experience in science or consent of Instructor.

[Additional Course and Faculty Information](#)

**SCE 5308 Research Design and Methodology for Science Educators** (*3 semester hours*)

Application of the methodological and philosophical foundations of research in science education pertaining to an individual research question. Topics include educational research ethics and design, measuring instruments and data manipulation, methodological rigor, evidence-based conclusions, and publication genres to support the development of a professional presentation and formal research paper. **Prerequisite:** SCE 5305

[Additional Course and Faculty Information](#)

**SCE 8398 Science Education Thesis** (*3 hours credit*) Development and completion of capstone project that demonstrates the student's ability to understand, construct, and execute original research in science education. (May be repeated.) **Prerequisite:** Approval of a research proposal by the supervising committee.

[Additional Course and Faculty Information](#)

**Content:**

**SCI 5325 Integrated Physical Science for Teachers** (*3 semester hours*) Investigation of physical science standards using pedagogical models of best practice applicable to a variety of learners in diverse contexts. Inquiry-based investigations feature Newton's laws, atoms, chemical and physical reactions, Bernoulli's law, simple machines, electricity, magnetism, light and heat, and energy – with a hands-on emphasis on the latest scientific research and educational application. [Additional Course and Faculty Information](#)

**SCI 5325 Integrated Earth Science for Teachers** (*3 semester hours*) Investigation of earth science standards using pedagogical models of best practice applicable to a variety of learners in diverse contexts. Inquiry-based investigations feature astronomy, meteorology, oceanography, physical geology, mapping, and historical geology – with a hands-on emphasis on the latest scientific research and educational application. [Additional Course and Faculty Information](#)

**SCI 5325 Integrated Life Science for Teachers** (*3 semester hours*) Investigation of life science standards using pedagogical models of best practice applicable to a variety of learners in diverse contexts. Inquiry-based investigations feature ecology, gymnosperms, angiosperm, plant and animal cells, digestion, respiration, circulation, skeletal system, nervous system, excretory system, reproduction, genetics, and differentiation of organisms – with a hands-on emphasis on the latest scientific research and educational application. [Additional Course and Faculty Information](#)

**Electives:**

**SCE 5v06 Special Topics: Lessons Learned from Leading Researchers in Science Education** (*3 semester hours*) Seminar-based instruction to explore research in science education to enrich classroom implementation and research integration. [Additional Course and Faculty Information](#)

**SCE 5v06 Special Topics: Independent Study in Science Education** (1-3 semester hours)

Project-based instruction to explore science education topic of high interest that enhances the student's educational outcome. **Prerequisite:** Approval of a tentative topic and workplan by the Supervising Instructor. [Additional Course and Faculty Information](#)

**SCI 5v06 Special Topics: Independent Study in Science** (1-3 semester hours)

Project-based instruction to explore science topic of high interest that enhances the student's educational outcome. (May be repeated for credit to a maximum of 9 hours.) **Prerequisite:** Approval of a tentative topic and workplan by the Supervising Instructor. [Additional Course and Faculty Information](#)

**SCI 5v06 Special Topics: Age of Dinosaurs** (3 semester hours) Introductory survey of the anatomy, physiology, life-styles, population, and evolution of dinosaurs and swimming and flying reptiles, as well as Mesozoic climates and basic Earth history of the "Age of Dinosaurs". [Additional Course and Faculty Information](#)

**ED 5320 Educational Technology** (3 semester hours) Addresses two key technological issues that directly impact education: information overload and non-linear processing. These same challenges offer the key to effective design and integration of web-based media into the classroom learning environment. By presenting educational technology as an open framework, teachers, administrators, researchers and curriculum developers will learn how to select/apply appropriate tools and develop/adapt to relevant resources that simplify and enhance their classroom teaching and everyday tasks. [Additional Course and Faculty Information](#)

**SCI 5322 Basis of Evolution** (3 semester hours) Basis of Evolution provides wide-ranging discussions of the unifying theory of the origin and modification through time of all organisms. Pertinent history, the fossil record, natural and sexual selection, evolutionary psychology, and philosophy are prominent topics. [Additional Course and Faculty Information](#)

**SCI 5330 Stella Modeling** (3 semester hours) This course is designed to explore the revolutionary idea that learning through understanding is a far- superior approach to education than is memorization of content knowledge. Developed at MIT, Systems Thinking is a method for studying the world around us as a whole while learning how all components interact with each other, not merely viewing systems as arrays of disconnected components. [Additional Course and Faculty Information](#)

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**Links referenced**

Program Information	<a href="http://www.telecampus.utsystem.edu/index.cfm/4,1281,82,56,html">http://www.telecampus.utsystem.edu/index.cfm/4,1281,82,56,html</a>
Frequently Asked Questions	<a href="http://www.telecampus.utsystem.edu/index.cfm/4,1282,82,56,html">http://www.telecampus.utsystem.edu/index.cfm/4,1282,82,56,html</a>
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Additional Course and Faculty Information	<a href="http://www.telecampus.utsystem.edu/index.cfm/4,1299,82,97,html">http://www.telecampus.utsystem.edu/index.cfm/4,1299,82,97,html</a>
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