UNIVERSITY OF MARYLAND GLOBAL CAMPUS

UNIVERSITY OF MARYLAND GLOBAL CAMPUS (UMGC)
DEPARTMENT OF EDUCATION

Conceptual Framework (CF) Alignment: UMGC's professional education unit instills in all candidates the belief that all students can learn and learn at high levels, and that they as teachers and teacher candidates are instrumental in ensuring that this learning occurs. This transcript review form is used for MAT admissions in conjunction with Key Assessments 2 – Description of transcript analysis process, which aligns with CF Learning Objective 1: Teaching for Learning – The candidate acts upon academic content, professional and pedagogical knowledge, and understanding of students to maximize student achievement. The use of this transcript review form also aligns with the Department's Professional Dispositions category 1: Relationship with students through curriculum and instruction.

MAT TRANSCRIPT REVIEW FORM FOR SECONDARY EARTH SPACE SCIENCE, 7-12 GRADE TEACHER CERTIFICATION – NSTA/NGSS STANDARDS 2013

NSTA/NGSS Assessment Standards for Certification	Typical Courses Aligned with Standards (Course Samples)	Courses Completed (Include Prefix, Number, and Name)	# of Credits
The Universe and its Stars • Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons • Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system	• Intro to Space, Science, and Technology • Intro to Astronomy • Visions of the Universe • The Sky and the Solar System		

• Develop a model to illustrate the life span of the sun and the role of nuclear fission in the sun's core to release energy that eventually reaches the Earth's surface • Construct an explanation of the Big Bang Theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe • Communicate scientific ideas about the way stars, over their life cycle, produce elements			
Earth and the Solar System • Analyze and interpret data to determine scale properties of objects in the solar system • Use mathematical or computational representations to predict the motion of orbiting objects in the solar system	• Introduction to Planetary Astronomy • Introduction to Stellar and Galactic Astronomy		
The History of Planet Earth • Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used • Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics • Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an	• Evolution of the Earth • Environmental Geology		

account of Earth's formation and early history			
Earth Materials and Systems • Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process • Construct an explanation for how geoscience processes have changed Earth's surface at varying time and spatial scales • Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features • Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems • Develop a model of Earth's interior to describe the cycling of matter by thermal convection • Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate	• Matter and Energy in the Environment • Environmental Geochemistry • Evolution and Ecology • Thermodynamics • Physical Geology		
The Role of Water in Earth's Surface Processes • Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity	• Intro to Urban Watersheds • Hydrogeology		

• Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions • Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determines regional climates • Plan and conduct an investigation of the properties of water and its effect on Earth's materials and surface processes	• Groundwater in the Environment		
Weather and Climate • Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere • Construct an argument about the simultaneous coevolution of Earth's systems and life on Earth	• Meteorology		
Natural Resources • Construct a scientific for how the uneven distribution of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes • Construct an explanation for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity	• Ecosystems and the Environment • Ecology of a Changing Planet • Studies in Natural Hazards		

• Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios			
Human Impacts on Earth's Systems • Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment • Construct an argument for how increases in human population and per-capita consumption of natural resources impact Earth's systems • Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity; • Evaluate or refine a technological solution that reduces impacts of human activities on natural systems	• Global Environmental Change		
Global Climate Change • Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century • Analyze geoscience data and the results from global climate models to make an	• Climate Change: Oceans to Atmospheres		

evidence-based forecast of the current rate of global or regional climate change and associated future impact to Earth's systems • Use a computational representation to illustrate the relationships among Earth's systems and how those relationships are being modified due to human activity			
		Total Credits:	

Note: Applicants may qualify to enter the MAT program with a content specialization in Earth Space Science if they have an undergraduate major in the certification area, or if they have completed 30 credit hours of coursework in Earth Space Science.

Secondary Earth Space Science, 7-12 Grade Teacher Certification
Full standards are available at NSTA: https://ngss.nsta.org/