



Program Guidebook

Master of Arts Science Education (Secondary Earth Science)

The Master of Arts in Science Education (Secondary Earth Science) is a competency-based degree program that prepares already licensed teachers for an endorsement in secondary earth and space science and provides the opportunity to develop skills in science curriculum development, design, and evaluation. All work in this degree program is online and includes Mathematics Content, General Science Content, Earth Sciences Content, and Science Education courses. All students complete a culminating Teacher Performance Assessment.

Understanding the Competency-Based Approach

Practically speaking, how do competency-based programs like those offered at Western Governors University (WGU) work? Unlike traditional universities, WGU does not award degrees based on completion of a certain number of credit hours or a certain set of required courses. Instead, you will earn your degree by demonstrating your skills, knowledge, and understanding of important concepts.

Progress through a degree program is governed not by the amount of time you spend in class but by your ability to demonstrate mastery of competencies as you complete required courses. Of course, you will need to engage in learning experiences as you review competencies or develop knowledge and skills in areas in which you may be weak. To help you acquire the knowledge and skills you need to complete your courses and program, WGU provides a rich array of learning resources. Your program mentor will work closely with you to help you understand the competencies required for your program and to help you create a schedule for completing your courses. You will also work closely with course instructors as you engage in each of your courses. As subject matter experts, course instructors will guide you through the content you must master to pass the course assessments.

The benefit of this competency-based system is that it enables students who are knowledgeable about a particular subject to make accelerated progress toward completing a degree, even if they lack college experience. You may have gained skills and knowledge of a subject while on the job, accumulated wisdom through years of life experience, or already taken a course on a particular subject. WGU will award your degree based on the skills and knowledge that you possess and can demonstrate—not the number of credits hours on your transcript.

Accreditation

Western Governors University is the only university in the history of American higher education to have earned accreditation from four regional accrediting commissions. WGU's accreditation was awarded by (1) the Northwest Commission on Colleges and Universities, (2) the Higher Learning Commission of the North Central Association of Colleges and Schools, (3) the Accrediting Commission for Community and Junior Colleges of the Western Association of Schools and Colleges, and (4) the Accrediting Commission for Senior Colleges and Universities of the Western Association of Schools and Colleges. The university's accreditation status is now managed by the Northwest Commission on Colleges and Universities (NWCCU), which reaffirmed WGU's accreditation in February 2020. The WGU Teachers College is accredited at the initial-licensure level by the Council for the Accreditation of Educator Preparation (CAEP) and by the Association of Advancing Quality in Educator Preparation (AAQEP). The nursing programs are accredited by the Commission on Collegiate Nursing Education (CCNE). The Health Information Management program is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM). The College of Business programs are accredited by the Accreditation Council for Business Schools and Programs (ACBSP).

The Degree Plan

The focus of your program is your personalized Degree Plan. The Degree Plan is a detailed blueprint of the courses you will need to complete in order to earn your degree. The Degree Plan also lays out the accompanying learning resources and assessments that compose your program. The list of courses in the Degree Plan is often referred to as the standard path. The amount of time it takes to complete your program depends on both the amount of new information you need to learn and the amount of time you plan to devote each week to study.

Students vary widely in the specific skills and information they need to learn. For example, some students may be highly knowledgeable in a particular subject matter and would not need to engage in new learning opportunities. Other students may find that portions of the program require them to learn new information and that they need to take an online class or participate in a study module to acquire the knowledge and skills needed to fulfill program competencies in that area. Some individuals may be able to devote as little as 15–20 hours per week to the program, while others may need to devote more time. For this reason,

pre-assessments are there to help your program mentor form a profile of your prior knowledge and create a personalized Degree Plan.

How You Will Interact with Faculty

At WGU, faculty serve in specialized roles, and they will work with you individually to provide the guidance, instruction, and support you will need to succeed and graduate. As a student, it is important for you to take advantage of this support. It is key to your progress and ultimate success.

Upon your enrollment, you will be assigned a program mentor—an expert in your field of study who will provide you with regular program-level guidance and support from the day you start until the day you graduate. Your program mentor will set up regular telephone appointments (weekly at first) with you, which you will be expected to keep. The mentor will review program competencies with you and work with you to develop a plan and schedule for your coursework. Your program mentor will serve as your main point of contact throughout your program—helping you set weekly study goals, recommending specific learning materials, telling you what to expect in courses, and keeping you motivated. In addition to regular calls, your program mentor is available to help you resolve questions and concerns as they arise.

For many of the courses at WGU, you will be required to complete performance assessments. These include reports, papers, presentations, and projects that let you demonstrate your mastery of the required competencies. A separate group of faculty members, called evaluators, will review your work to determine whether it meets requirements. Evaluators are also subject matter experts in their field of evaluation. If your assessment needs further work before it “passes,” these evaluators, who review your work anonymously, will provide you with instructional feedback to help you meet evaluation standards and allow you to advance.

Connecting with Other Mentors and Fellow Students

As you proceed through your Degree Plan, you will have direct contact with multiple faculty members. These communications can take a variety of forms, including participation in one-on-one discussions, chats in the learning communities, and live cohort and webinar opportunities. As a WGU student, you will have access to your own personal MyWGU Student Portal, which will provide a gateway to your courses of study, learning resources, and learning communities where you will interact with faculty and other students.

The learning resources in each course are specifically designed to support you as you develop competencies in preparation for your assessments. These learning resources may include reading materials, videos, tutorials, cohort opportunities, community discussions, and live discussions that are guided by course instructors who are experts in their field. You will access your program community during your orientation course to network with peers who are enrolled in your program and to receive continued support through professional enrichment and program-specific chats, blogs, and discussions. WGU also provides Student Services associates to help you and your program mentor solve any special problems that may arise.

Orientation

The WGU orientation course focuses on acquainting you with WGU's competency-based model, distance education, technology, and other resources and tools available for students. You will also utilize WGU program and course communities, participate in activities, and get to know other students at WGU. The orientation course must be completed before you can start your first term at WGU.

Transferability of Prior College Coursework

Because WGU is a competency-based institution, it does not award degrees based on credits but rather on demonstration of competency. WGU undergraduate programs may accept transfer credits or apply a

'Requirement Satisfied' (RS) in some cases. Refer to your specific program transfer guidelines to determine what can be satisfied by previously earned college credits. In most cases, WGU does not accept college transfer credits at the graduate (master's) level. Students entering graduate programs must have their undergraduate degree transcripts verified before being admitted to WGU. In addition to a program's standard course path, there may be additional state-specific requirements.

[Click here for the Student Handbook](#)

WGU does not waive any requirements based on a student's professional experience and does not perform a "résumé review" or "portfolio review" that will automatically waive any degree requirements. Degree requirements and transferability rules are subject to change in order to keep the degree content relevant and current.

Remember, WGU's competency-based approach lets you take advantage of your knowledge and skills, regardless of how you obtained them. Even when you do not directly receive credit, the knowledge you possess may help you accelerate the time it takes to complete your degree program.

Areas of Study for Master of Arts Science Education (Secondary Earth Science)

The following section includes the areas of study in the program, with their associated courses. Your specific learning resources and level of instructional support will vary based on the individual competencies you bring to the program and your confidence in developing the knowledge, skills, and abilities required in each area of the degree. The Degree Plan and learning resources are dynamic, so you need to review your Degree Plan and seek the advice of your mentor regarding the resources before you purchase them.

Science

Concepts in Science

Concepts in Science for graduates provides already-licensed teachers seeking an additional license or endorsement in science education with an introduction to essential science themes present within and across all science disciplines, including chemistry, physics, biology, and the geosciences. These themes include comprehending the magnitude of the physical and natural world, analyzing and converting measurements, understanding the basic nature and behavior of matter and energy, examining atomic structure, identifying and naming basic types of chemical bonds, and analyzing and interpreting scientific data. Concepts in Science provides a solid foundation for future, in-depth, scientific studies and should be taken prior to any other science content course. There are no prerequisites for this course.

This course covers the following competencies:

Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.

The graduate analyzes a variety of measurements to solve scientific problems.

The graduate analyzes interactions between matter and energy to explain how they flow within, into, and out of systems.

The graduate analyzes the composition of atoms and compounds to explain the properties of matter.

The graduate evaluates experimental data to determine their validity.

Chemistry Content

Chemistry with Lab

Chemistry with Lab for graduates provides already licensed teachers seeking an additional license or endorsement in middle grades science or secondary physics, biological science, or earth science with an introduction to the field of chemistry. Designed for those not majoring in chemistry education, this course highlights how the topics covered can be applied within various branches of science. This course provides students with opportunities to examine the electronic structure of atoms, study periodic trends, name chemical compounds, write chemical formulas, determine the structure of molecules, balance chemical reactions, and discover the changing states of matter. Laboratory experiences facilitate the study of matter and the application of laboratory safety and maintenance procedures. Concepts in Science for graduates is a prerequisite for this course.

This course covers the following competencies:

Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.

The graduate evaluates how chemistry is related to other sciences to understand its relevance within the physical and natural world.

The graduate conducts safe and effective investigations to test hypotheses and draw conclusions.

The graduate analyzes the electronic structure of atoms and periodic trends to distinguish properties of various substances.

The graduate explains how to use the periodic table and IUPAC rules to name chemical compounds.

The graduate explains how chemical bonds and electron orientation impact the structures and behavior of molecules to understand the composition of matter.

The graduate balances chemical equations to determine what happens during a chemical reaction.

The graduate analyzes the relationship between heat and other forms of energy to examine the behavior of heat under various circumstances.

The graduate examines the physical states of matter to explain their properties and the process by which matter changes state.

General Science Content

General Physics

This course provides a broad overview of the principles of mechanics, thermodynamics, wave motion, modern physics, and electricity and magnetism and invites students to apply them by solving problems, performing labs, and reflecting on concepts and ideas.

This course covers the following competencies:

Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.

The graduate has a broad understanding of energy, including mechanics, heat, and electricity and magnetism.

The graduate has a broad understanding of wave motion and atomic nuclear physics.

Ecology and Environmental Science

Ecology and Environmental Science is an introductory course for graduate students seeking initial licensure or endorsement

The graduate analyzes topographical and geologic maps to deduce landform and geologic features.

The graduate examines solar system objects, including composition, properties, location, and origin, to determine Earth's evolution within the solar system.

Geology II: Earth Systems

Geology II: Earth Systems provides graduate students seeking licensure or endorsement and/or to earn their MA degree in secondary science education with an examination of the geosphere, atmosphere, hydrosphere, and biosphere and the dynamic equilibrium of these systems over geologic time. This course also examines the history of Earth and its lifeforms, with an emphasis in meteorology. A prerequisite for this course is Geology I: Physical.

This course covers the following competencies:

Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.

The graduate maps the structure and function of Earth's geosphere for soil utility in the environment.

The graduate examines the structure and composition of Earth's atmosphere to distinguish its current atmosphere from historical and other planetary atmospheres.

The graduate evaluates physical meteorological principles and processes to predict weather patterns and the movement of air masses.

The graduate analyzes various factors and influences on climate to anticipate long-term effects.

The graduate examines the structure and function of Earth's surface water, ice, groundwater, and oceans to explain global water management.

The graduate discusses Earth's history and life-forms to trace physical and biological evolutionary processes on this planet.

The graduate analyzes how Earth's systems (i.e., biosphere, geosphere, atmosphere, and hydrosphere) interface and evolve over geologic time to teach biologic, geologic, atmospheric, meteorologic, and hydrologic interaction.

Astronomy

Astronomy provides graduate students seeking initial licensure or endorsement and/or to earn their MA degree in secondary or middle grade science education with essential knowledge of astronomy. This course explores Western history and basic physics of astronomy; phases of the moon and seasons; composition and properties of solar system bodies; stellar evolution and remnants; properties and scale of objects and distances within the universe; and introductory cosmology. A prerequisite for this course is General Physics.

This course covers the following competencies:

Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.

The graduate traces Western history of astronomy to place key concepts and famous scientists in cultural context.

The graduate applies tools and techniques necessary to study astronomical objects and events.

The graduate evaluates composition and structure of our solar system to describe Earth's place and evolution.

The graduate discusses classification and life cycle of stars, such as our sun and its fate, to explain the diversity of celestial objects, including stellar remnants.

The graduate critiques the structure, composition, and classification of the Milky Way and other galaxies as well as concepts of cosmology and the Doppler effect of light to explain the physical evolution of the universe.

The Ocean Systems

This course investigates the complex ocean system by looking at the way its components—atmosphere, biosphere, geosphere, hydrosphere—interact. Specific topics include the origins of Earth's oceans and the early history of life; physical characteristics and geologic processes of the ocean floor; chemistry of the water molecule; energy flow between air and water and how ocean surface currents and deep circulation patterns affect weather and climate; marine biology and why ecosystems are an integral part of the ocean system; the effects of human activity; and the role of professional educators in teaching about ocean systems.

This course covers the following competencies:

Begin your course by discussing your course planning tool report with your instructor and creating your personalized

their content areas to evaluate, enhance, and plan appropriate science instruction. This course includes laboratory safety training and certification, which includes safe laboratory practices and procedures for science classrooms and the proper use of personal protective equipment. Previous coursework in curriculum, instruction, and assessment is a prerequisite for this course.

This course covers the following competencies:

Begin your course by discussing your course planning tool report with your instructor and creating your personalized course plan together.

The graduate analyzes connections among the three dimensions of science instruction—disciplinary core ideas, crosscutting concepts, and science and engineering practices—to prepare and plan for instruction.

The graduate integrates technology into science activities to support student engagement and content mastery.

The graduate develops assessment strategies that measure three-dimensional science learning to determine the

Accessibility and Accommodations

Western Governors University is committed to providing equal access to its academic programs to all qualified students. WGU's Accessibility Services team supports this mission by providing support, resources, advocacy, collaboration, and academic accommodations for students with disabilities and other qualifying conditions under the Americans with Disabilities Act (ADA). WGU encourages student to complete the Accommodation Request Form as soon as they become aware of the need for an accommodation. Current and prospective students can reach the Accessibility Services team Monday through Friday 8:00 a.m. to 5:00 p.m. MST at 1-877-HELP-WGU (877-435-7948) x5922 or at ADASupport@wgu.edu.

Need More Information? WGU Student Services

WGU's Student Services team is dedicated exclusively to helping you achieve your academic goals. The Student Services office is available during extended hours to assist with general questions and requests. The Student Services team members help you resolve issues, listen to student issues and concerns, and make recommendations for improving policy and practice based on student feedback.

Student Services team members also assist with unresolved concerns to find equitable resolutions. To contact the Student Services team, please feel free to call 877-435-7948 or e-mail studentservices@wgu.edu. We are available Monday through Friday from 6:00 a.m. to 10:00 p.m., Saturday from 7:00 a.m. to 7:00 p.m., mountain standard time. Closed Sundays.

If you have inquiries or concerns that require technical support, please contact the WGU IT Service Desk. The IT Service Desk is available Monday through Friday, 6:00 a.m. to 10:00 p.m. and Saturday and Sunday, 10:00 a.m. to 7:00 p.m., mountain standard time. To contact the IT Service Desk, please call 1-877-HELP-WGU (877-435-7948) or e-mail servicedesk@wgu.edu. The support teams are generally closed in observance of university holidays.

For the most current information regarding WGU support services, please visit "Student Support" on the Student Portal at <http://my.wgu.edu>.