



## Program Guidebook

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### Master of Arts Science Education (Secondary Chemistry)

*The Master of Arts Science Education (Secondary Chemistry) is a competency-based degree program that prepares already licensed teachers for an endorsement in secondary chemistry 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, Chemistry 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 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 2017. The WGU Teachers College is accredited by the National Council for Accreditation of Teacher Education (NCATE). 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. However, if you have completed college coursework at another accredited institution, or if you have completed industry certifications, you may have your transcripts and certifications evaluated to determine if you are eligible to receive some transfer credit. The guidelines for determining what credits will be granted varies based on the degree program. Students entering graduate programs must have their undergraduate degree verified before being admitted to WGU. To review more information in regards to transfer guidelines based on the different degree programs, you may visit the Student Handbook found at the link below and search for "Transfer Credit Evaluation." Within the Teachers College, there may be additional courses to meet state 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.

## Continuous Enrollment, On Time Progress, and Satisfactory Academic Progress

WGU is a "continuous enrollment" institution, which means you will be automatically enrolled in each of your new terms while you are at WGU. Each term is six months long. Longer terms and continuous enrollment allow you to focus on your studies without the hassle of unnatural breaks between terms that you would experience at a more traditional university. At the end of every six-month term, you and your program mentor will review the progress you have made and revise your Degree Plan for your next six-month term.

WGU requires that students make measurable progress toward the completion of their degree programs every term. We call this "On-Time Progress," denoting that you are on track and making progress toward on-time graduation. As full-time students, graduate students must enroll in at least 8

competency units each term, and undergraduate students must enroll in at least 12 competency units each term. Completing at least these minimum enrollments is essential to On-Time Progress and serves as a baseline from which you may accelerate your program. We measure your progress based on the courses you are able to pass, not on your accumulation of credit hours or course grades. Every time you pass a course, you are demonstrating that you have mastered skills and knowledge in your degree program. For comparison to traditional grading systems, passing a course means you have demonstrated competency equivalent to a “B” grade or better.

WGU assigns competency units to each course in order to track your progress through the program. A competency unit is equivalent to one semester credit of learning. Some courses may be assigned 3 competency units while others may be as large as 12 competency units.

Satisfactory Academic Progress (SAP) is particularly important to students on financial aid because you must achieve SAP in order to maintain eligibility for financial aid. We will measure your SAP quantitatively by reviewing the number of competency units you have completed each term. In order to remain in good academic standing, you must complete at least 66.67% of the units you attempt over the length of your program—including any courses you add to your term to accelerate your progress. Additionally, during your first term at WGU you must pass at least 3 competency units in order to remain eligible for financial aid. We know that SAP is complex, so please contact a financial aid counselor should you have additional questions. \*Please note: The Endorsement Preparation Program in Educational Leadership is not eligible for federal financial aid.

## Courses

Your Degree Plan includes courses needed to complete your program. To obtain your degree, you will be required to demonstrate your skills and knowledge by completing the assessment(s) for each course. In general there are two types of assessments: performance assessments and objective assessments. Performance assessments contain, in most cases, multiple scored tasks such as projects, essays, and research papers. Objective assessments include multiple-choice items, multiple-selection items, matching, short answer, drag-and-drop, and point-and-click item types, as well as case study and video-based items. Certifications verified through third parties may also be included in your program. More detailed information about each assessment is provided in each course of study.

## External Content & Basic Skills Exams

Western Governors University requires that candidates pass the state-mandated content exam that aligns with their WGU program in addition to a basic skills exam (initial licensure programs only). Specific information regarding required content and basic skills exams required for each program and state can be found in the WGU Student Handbook. In many cases, it is the candidates’ responsibility to register and pay for the required exams and submit their official passing score reports to WGU.

## State Licensure Requirements

Many states have specific licensure requirements that are not part of WGU programs that you will have to fulfill in addition to the degree requirements of your program. These state licensure requirements might include, but are not limited to: subject-specific licensure exams, state-specific teacher performance assessments, course work related to state history, basic skills exams, and background clearances. The WGU Student Handbook outlines the credentialing requirements of each state. Teacher

candidates should consult the applicable section to become familiar with their state's expectations regarding licensure..

## Learning Resources

WGU works with many different educational partners, including enterprises, publishers, training companies, and higher educational institutions, to provide high-quality and effective learning resources that match the competencies you are developing. These vary in type, and may be combined to create the best learning experience for your course. A learning resource can be an e-textbook, online module, study guide, simulation, virtual lab, tutorial, or a combination of these. The cost of most learning resources are included in your tuition and Learning Resource Fee. They can be accessed or enrolled for through your courses. Some degree-specific resources are not covered by your tuition, and you will need to cover those costs separately. WGU also provides a robust library to help you obtain additional learning resources, as needed.

Mobile Compatibility:

The following article provides additional details about the current state of mobile compatibility for learning resources at WGU. It includes a list that can be referenced to determine the mobile friendliness of all core course materials used in a program.

[Student Handbook article: Can I use my mobile device for learning resources?](#)

## Standard Path

As previously mentioned, competency units (CUs) have been assigned to each course in order to measure your academic progress. If you are an undergraduate student, you will be expected to enroll in a minimum of 12 competency units each term. Graduate students are expected to enroll in a minimum of 8 competency units each term. A standard plan for a student for this program who entered WGU without any transfer units would look similar to the one on the following page. Your personal progress can be faster, but your pace will be determined by the extent of your transfer units, your time commitment, and your determination to proceed at a faster rate.

## Standard Path *for* Master of Arts Science Education (Secondary Chemistry)

Course Description	CUs	Term
Concepts in Science	1	1
Integrated Physical Sciences	2	1
General Chemistry I with Lab	3	1
General Chemistry II with Lab	3	1
Precalculus and Calculus	2	2
Physical Chemistry	2	2
Inorganic Chemistry	2	2
Science, Technology, and Society	2	2
Organic Chemistry	2	3
Biochemistry	2	3
Climate Change	3	3
Chemistry: Content Knowledge	1	3
Science Methods—Secondary Chemistry	3	4
MA, Science Education Teacher Performance Assessment	6	4

### Changes to Curriculum

WGU publishes an Institutional Catalog, which describes the academic requirements of each degree program. Although students are required to complete the program version current at the time of their enrollment, WGU may modify requirements and course offerings within that version of the program to maintain the currency and relevance of WGU's competencies and programs. As these changes are implemented, WGU will ensure that the length of the student's degree program (i.e., total competency unit requirements) will not increase and that competency units already earned will be applied to the updated program version. When program requirements are updated, students readmitting after withdrawal from the university will be expected to re-enter into the most current catalog version of the program.

# Areas of Study for Master of Arts Science Education (Secondary Chemistry)

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

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### 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:*

- *The graduate analyzes a variety of measurements to solve scientific problems.*
- *The graduate evaluates experimental data to determine their validity.*
- *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.*

## General Science Content

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### Integrated Physical Sciences

This course provides students with an overview of the basic principles and unifying ideas of the physical sciences: physics, chemistry, and Earth sciences. Course materials focus on scientific reasoning and practical and everyday applications of physical science concepts to help students integrate conceptual knowledge with practical skills.

*This course covers the following competencies:*

- *The graduate describes the underlying organization, interactions, and processes within the Earth system including the Earth's structure and atmosphere, and Earth's interactions within the solar system.*
- *The graduate describes the nature and process of science.*
- *The graduate examines applications of physics including fundamental concepts such as forces, motion, energy, and waves.*
- *The graduate examines applications of key chemistry concepts including the structure of matter and the behavior and conservation of matter in chemical reactions.*

## Chemistry Content

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### General Chemistry I with Lab

General Chemistry I with Lab for graduates provides already-licensed teachers seeking an additional license or endorsement in secondary chemistry, with an introduction to the field of chemistry, the branch of science that studies the composition, structure, properties, and behavior of matter. 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 is a prerequisite for this course.

*This course covers the following competencies:*

- *The graduate analyzes the physical states of matter to explain transformations in matter and energy.*
- *The graduate analyzes quantities of substances consumed and produced to explain what happens during chemical reactions.*
- *The graduate analyzes the electronic structure of atoms and periodic trends to explain the characteristics and behaviors of chemicals.*
- *The graduate explains how to use the periodic table and IUPAC nomenclature rules to name compounds and write chemical formulas.*
- *The graduate analyzes the quantities of heat released or absorbed during chemical reactions to understand the behavior of heat under various circumstances.*
- *The candidate distinguishes the ways in which chemical bonds and electron orientation impact the structures and behavior of molecules to understand the composition of matter.*
- *The graduate conducts safe and effective investigations to answer testable research questions regarding the physical and chemical characteristics of matter.*
- *The graduate writes balanced chemical equations to analyze what happens during a chemical reaction.*

## General Chemistry II with Lab

C673: General Chemistry II with Lab for graduates continues the study of general chemistry for already-licensed teachers seeking an additional license or endorsement in secondary chemistry. Building on the topics covered in General Chemistry I, General Chemistry II examines the behavior of gases and solutions, reaction rates and equilibrium, acids and bases, and oxidation-reduction reactions. Also, this course provides an introduction to three subdisciplines of chemistry: organic chemistry, biochemistry, and nuclear chemistry. Laboratory experiences reinforce the essential skills required for conducting successful scientific investigations. C672: General Chemistry I for graduates is a prerequisite for this course.

*This course covers the following competencies:*

- *The graduate examines the rate and process by which reactions occur to analyze chemical changes.*
- *The graduate hypothesizes how acids and bases will react to control the outcomes of chemical reactions.*
- *The graduate determines the composition of key organic biochemical compounds to distinguish various macromolecules.*
- *The graduate balances oxidation-reduction (redox) equations to determine how substances are reduced and oxidized during chemical reactions.*
- *The graduate balances nuclear equations to demonstrate the rearrangement of subatomic particles during a nuclear reaction.*
- *The graduate conducts effective scientific investigations to analyze chemical processes in real-world contexts.*
- *The graduate analyzes solutions to generate new solutions and calculate their reactions.*
- *The graduate analyzes the relationships between volume, pressure, and temperature to solve problems using gas laws.*

## Physical Chemistry

Physical Chemistry introduces the study of chemistry in terms of physical concepts. It includes thermodynamics, reaction kinetics, chemical equilibrium, electrochemistry, and matter.

*This course covers the following competencies:*

- *The graduate applies concepts of the second law of thermodynamics and free energy to predict the spontaneity of a process and analyze chemical equilibrium.*
- *The graduate applies models and equations of state to analyze properties of real gases.*
- *The graduate applies concepts of thermodynamics and electrochemistry to analyze the interchange of chemical and electrical energy.*
- *The graduate uses experimental data and kinetic models to analyze reaction rates and reaction mechanisms.*
- *The graduate applies the first law of thermodynamics to analyze heat transfers associated with chemical processes and changes in state.*

## **Inorganic Chemistry**

Inorganic Chemistry introduces the concepts of Inorganic chemistry—the branch of chemistry that studies the properties and behavior of any compound avoiding a specific focus on carbon. It will focus on the three most important areas of inorganic chemistry: the structure, properties, and reactions of various groups of inorganic compounds.

*This course covers the following competencies:*

- *The graduate analyzes atomic structure and can demonstrate major principles and rules of atomic structure.*
- *The graduate can demonstrate how the structure of a material's molecules can determine its strength and uses.*
- *The graduate demonstrates how atoms or ions in minerals are glued together by electrical bonds that are ionic or covalent, and computes the bond order in a molecule.*
- *The graduate demonstrates that groups of elements possess similar physical and chemical properties and can determine trends using the periodic chart.*
- *The graduate demonstrates properties of compounds and constructs models of bonding compounds and complex ions.*
- *The graduate demonstrates the microscopic and macroscopic features of solids and demonstrates how crystallography informs solid state chemistry.*

## **Organic Chemistry**

Organic Chemistry focuses on the study of compounds that contain carbon, much of which is learning how to organize and group organic compounds in order to predict their structure, behavior, and reactivity based on common bonds found within an organic compound.

*This course covers the following competencies:*

- *The graduate uses drawings and models to communicate and predict the structure and shape of organic molecules.*
- *The graduate applies concepts of acid-base chemistry to determine the relative acidities of organic acids and the position of equilibrium in an acid-base reaction.*
- *The graduate analyzes properties and reactions of important organic compounds, including aromatic compounds.*
- *The graduate applies concepts of stereochemistry to analyze organic molecules.*
- *The graduate applies the IUPAC nomenclature to name organic molecules.*
- *The graduate applies mechanisms to analyze organic reactions, including organic synthesis.*
- *The graduate applies instrumental methods of analysis to determine the structure of organic compounds.*

## **Biochemistry**

Biochemistry covers the structure and function of the four major polymers produced by living organisms. These include nucleic acids, proteins, carbohydrates, and lipids.

This course focuses on application! Be sure to understand the underlying biochemistry in order to grasp how it is applied. By successfully completing this course, you will gain an introductory understanding of the chemicals and reactions that sustain life. You will also begin to see the importance of this subject matter to health.

*This course covers the following competencies:*

- *The graduate constructs models of enzymes, demonstrates how enzymes act as a catalyst in a reaction, including factors that influence this reaction, and solves enzyme and pathway problems.*
- *The graduate constructs models of fatty acids and demonstrates why lipids are essential to the functioning of cells.*
- *The graduate demonstrates how nucleic acid polymers can transform cells and transmit information within the cell.*
- *The graduate constructs models of the structure and function of amino acids and peptide bonds, predicts ionization of an amino acid, demonstrates peptide bond breaking, and demonstrates how protein structure affects susceptibility or resistance to disease.*
- *The graduate constructs models of carbohydrates, demonstrates metabolism of carbohydrates, and demonstrates how adenosine triphosphate (ATP) is essential to energy transfer in the cell and how irregularities in ATP synthesis in the cell can cause cytopathologies.*
- *The graduate constructs models of various states of hemoglobin, demonstrates how changes in the usual configuration of hemoglobin can lead to molecular disease, and distinguishes between the chemical structure and function of hemoglobin and myoglobin.*

## Climate Change

This course explores the science of climate change. Students will learn how the climate system works; what factors cause climate to change across different time scales and how those factors interact; how climate has changed in the past; how scientists use models, observations and theory to make predictions about future climate; and the possible consequences of climate change for our planet. The course explores evidence for changes in ocean temperature, sea level and acidity due to global warming. Students will learn how climate change today is different from past climate cycles and how satellites and other technologies are revealing the global signals of a changing climate. Finally, the course looks at the connection between human activity and the current warming trend and considers some of the potential social, economic and environmental consequences of climate change.

*This course covers the following competencies:*

- *The graduate interprets climate system factors to evaluate drivers and forcings related to climate change.*
- *The graduate evaluates models, observations, past evidence, and theories to understand the changing climate.*
- *The graduate utilizes knowledge of risks and uncertainties in predicting consequences of climate change to educate others.*
- *The graduate evaluates climate as a system and the components of the climate system.*

## Chemistry: Content Knowledge

Chemistry: Content Knowledge provides advanced instruction in the main areas of chemistry for which secondary chemistry teachers are expected to demonstrate competency. Topics include matter and energy, thermochemistry, structure, bonding, reactivity, biochemistry and organic chemistry, solutions, nature of science, technology and social perspectives, mathematics, and laboratory procedures.

*This course covers the following competencies:*

- *The graduate synthesizes concepts and processes from across chemistry to generate a comprehensive understanding of the field.*
- *The graduate verifies that they possess the requisite chemistry knowledge and skills by passing the chemistry content knowledge test required to become a beginning teacher of secondary school chemistry.*

## Mathematics Content

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## Precalculus and Calculus

Precalculus and Calculus provides instruction in precalculus and calculus and applies them to examples found in both mathematics and science. Topics in precalculus include principles of trigonometry, mathematical modeling, and logarithmic, exponential, polynomial, and rational functions. Topics in calculus include conceptual knowledge of limit, continuity, differentiability, and integration.

*This course covers the following competencies:*

- *The graduate has a conceptual knowledge of limit, continuity, differentiability, and integration; and applies these concepts to examples in mathematics and the sciences.*
- *The graduate understands and applies the principles of trigonometry; mathematical modeling; and logarithmic, exponential, polynomial, and rational functions.*

## Science Education

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### Science, Technology, and Society

Science, Technology, and Society explores the ways in which science influences and is influenced by society and technology. A humanistic and social endeavor, science serves the needs of ever-changing societies by providing methods for observing, questioning, discovering, and communicating information about the physical and natural world. This course prepares educators to explain the nature and history of science, the various applications of science, and the scientific and engineering processes used to conduct investigations, make decisions, and solve problems. There are no prerequisites for this course.

*This course covers the following competencies:*

- *The graduate conducts investigations in science to solve open-ended problems using appropriate scientific methods.*
- *The graduate analyzes the historical development of science, including how scientific knowledge evolves.*
- *The graduate analyzes the various ways in which science, technology, and society are interrelated.*
- *The graduate analyzes the nature of science, including how science distinguishes itself from other ways of knowing.*
- *The graduate analyzes the relationships among themes that appear across multiple scientific ideas.*
- *The graduate formulates testable hypotheses for scientific investigations.*
- *The graduate analyzes socially relevant scientific issues to make informed decisions based on data and context.*
- *The graduate uses technology tools and mathematics to improve investigations and the communication of results.*
- *The graduate analyzes the principles, processes, and assumptions of investigations in science to engage students in the nature of inquiry.*

### Science Methods—Secondary Chemistry

Science Methods—Secondary Chemistry focuses on teaching methods specific to science for graduate students seeking an endorsement in secondary chemistry. Course content focuses on the design and teaching of standards-based lessons using the three dimensions of science (science and engineering practices, crosscutting concepts, and disciplinary core ideas) and the appropriate integration of technology into those lessons. Students in this course work within 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. There are no prerequisites for this course.

*This course covers the following competencies:*

- *The graduate establishes an emergency response plan to prepare for potential emergency situations in the science learning environment.*
- *The graduate develops plans for the use, storage, and maintenance of science materials and protective equipment*

*and for the care of living organisms to comply with district, state, and federal safety, ethical, and legal standards for science teachers.*

- *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 effectiveness of teaching and learning experiences.*
- *The graduate develops lessons that integrate the three dimensions of science with applicable technologies to connect scientific concepts and phenomena.*

## Teacher Performance Assessment

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### MA, Science Education Teacher Performance Assessment

MA, Science Education Teacher Performance Assessment contains a comprehensive, original, research based curriculum unit designed to meet an identified educational need. It provides direct evidence of the candidate's ability to design and implement a multi-week, standards-based unit of instruction, assess student learning, and then reflect on the learning process. The WGU Teacher Performance Assessment requires students to plan and teach a multi-week standards-based instructional unit consisting of seven components: 1) Contextual factors, 2) learning goals, 3) assessment, 4) design for instruction, 5) instructional decision making, 6) analysis of student learning, and 7) self-evaluation and reflection.

*This course covers the following competencies:*

- *The graduate integrates strategies to develop academic language that facilitates effective student participation and engagement in learning.*
- *The graduate integrates and synthesizes competencies from across the degree program, thereby demonstrating the ability to participate in and contribute value to the chosen professional field.*
- *The graduate integrates a variety of strategies and resources to differentiate instruction and meet the needs of diverse learners.*
- *The graduate demonstrates ethical responsibilities and appropriate teaching dispositions, including those outlined in the Western Governors University Teachers College Code of Ethics.*
- *The graduate utilizes assessment data to profile student learning, communicate information about student progress and achievement, and guide and modify instruction.*
- *The graduate evaluates the teaching context to accommodate student differences to plan for instruction and assessment.*
- *The graduate plans comprehensive learning segments of instruction and assessment that align with standards and the needs of students.*
- *The graduate evaluates teaching experiences including the planning and implementing of curriculum and instruction through ongoing reflection.*
- *The graduate recommends strategies that support the development of academic language for all students.*
- *The graduate recommends improvements for instruction and professional practice through personal reflection.*
- *The graduate develops appropriate plans for professional growth in subject matter knowledge and pedagogical skills, including habits and skills of continual inquiry and learning.*
- *The graduate plans learning environments that support individual learning, collaboration, and positive social interaction.*
- *The graduate applies instructional strategies that promote learning, engage students, and provide differentiated instruction.*

## 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 administrative or accessibility issues. 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. The Student Services team provides a formal means by which you can express your views, which in turn will inform the decisions we make.

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](mailto: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](mailto: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>.