WESTERN GOVERNORS UNIVERSITY
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Program Guidebook

Endorsement Preparation Program, Physics

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The Physics Secondary Endorsement equips licensed secondary science educators with the specialized knowledge and credentials needed to teach Physics at the secondary level. This endorsement is available exclusively to individuals who hold a current professional license in secondary science. Candidates will engage in a carefully designed sequence of learning experiences intended to build their capacity to understand Physics content and effectively plan, deliver, and assess instruction in alignment with secondary education standards.

Understanding the Competency-Based Approach

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

Progress through a degree program is measured not by the amount of time you spend in class but by your ability to demonstrate competency as you complete required courses along a Standard Path. To help you acquire the knowledge and skills you need to demonstrate competency and 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 your program's requirements and help you create a plan for completing your courses. You will also work closely with course instructors as you engage in each course. As subject matter experts, course instructors will guide you through the content you must learn to demonstrate competency through 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 you possess and can demonstrate—not the number of hours spent in a classroom.

Accreditation

Western Governors University is the only university in the history of American higher education to have earned initial accreditation from multiple regional accrediting commissions at once—earning simultaneous accreditation from ACCJC, HLC, NWCCU, and WASC. The university’s accreditation from the Northwest Commission on Colleges and Universities (NWCCU) was reaffirmed in March of 2024. In addition to institution-level accreditation, each school has at least one program that is accredited by a programmatic accreditor. All programmatic accreditations are managed by the Academic Engagement department. Contact compliance@wgu.edu for additional information.

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 will introduce you to the fundamentals of WGU’s competency-based education (CBE) and the expectations, policies, and protocols for students enrolled in a WGU degree program. Orientation will introduce you to WGU’s wide range of support resources and success centers. It also will provide you with study strategies recommended by current students and faculty that will help you succeed as a WGU student. Orientation ends with your first assessment at WGU, providing an opportunity to experience WGU’s performance assessment process before you begin your degree-focused coursework. 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. 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.

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 onthe 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.

Courses

Your Degree Plan includes courses needed to complete your program. To obtain your degree, you must demonstrate your skills and knowledge by completing each course's assessment(s). You may be asked to demonstrate competency in a course in several different ways, including proctored exams, projects, essays, research papers, and simulations, among others. Certifications verified through third parties may also be included in your program as a way to demonstrate competency. More detailed information about each assessment is provided in the 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

Some 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.

Mobile Access 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* Endorsement Preparation Program, Physics

Course Description	CUs
General Physics I	3
Calculus I	3
General Physics II with Lab	4
Electricity and Magnetism	3
Astrophysics with Lab	4
Waves, Acoustics, and Sound	3
Secondary Physics Curriculum	3
Total CUs	23

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. 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 Endorsement Preparation Program, Physics

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.

General Science Content

General Physics I

This General Physics course covers fundamental concepts, including Newton's Laws, forces, motion, energy, waves, electricity, and magnetism, with real-world applications and insights into relativity and quantum theory. Learners will study measurement, forces and motion, Newton's Laws, centrifugal and centripetal forces, friction, gravity, momentum, collisions, vectors, wave motion, energy, thermodynamics, and electromagnetic waves. Skills developed include scientific literacy, physical science application, systems thinking, and scientific reasoning.

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 learner applies concepts of energy and entropy to describe systems.*
- *The learner applies concepts of physics to describe forces, motion, and momentum.*
- *The learner describes electricity, magnetism, and their relationship.*

Mathematics Education

Calculus I

Calculus I offers a foundational exploration of the essential concepts and applications of calculus, crucial for higher-level mathematics and various scientific fields. This course begins with an overview of calculating limits and continuity of functions, setting the stage for the study of derivatives. Then, students will explore applications of derivatives, including applications to objects in motion, optimization, and related rates. Finally, the course focuses on both definite and indefinite integrals, leading to the mastery of the Fundamental Theorem of Calculus. This course prepares students for advanced mathematical studies and provides the groundwork for advanced calculus topics addressed in Calculus II and Multivariable Calculus.

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 learner applies rules of differentiation to solve problems involving rates of change, including linear approximations, optimization, and graphs of functions.*
- *The learner determines limits and continuity of functions to solve problems.*
- *The learner evaluates definite and indefinite integrals using geometry and the Fundamental Theorem of Calculus.*

Science Education

General Physics II with Lab

General Physics II with Lab builds on the foundational concepts covered in General Physics I, guiding students through introductory topics in heat and thermodynamics, geometric optics, and the interactions and transformations of energy within atomic and subatomic systems. Students will explore the distinction between heat and temperature, methods of heat transfer, specific heat capacity, the laws of thermodynamics, kinetic theory of gases, and the principles of heat engines and efficiency. The course delves into electromagnetic waves, Snell's law, total internal reflection, thin film interference, ray tracing for lenses and mirrors, dispersion, polarization, diffraction, and the functioning of optical instruments. Finally, students will analyze Interaction and Transformations of Energy, explore atomic models and structures, atomic spectral absorption and emission, radioactivity and radioactive decay, nuclear processes like fusion and fission, and mass-energy relationships. Throughout the course, students will develop scientific literacy and the ability to apply scientific principles, enhancing their understanding of physical science concepts and their applications.

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 learner analyzes the interactions and transformations of energy within atomic and subatomic systems.*
- *The learner applies the principles of light refraction and reflection to understand geometric optics.*
- *The learner describes the principles of heat and thermodynamics, including laws of thermodynamics and heat transfer methods.*

Electricity and Magnetism

Electricity and Magnetism is a comprehensive exploration of the fundamental principles of electricity and magnetism. This course is designed to help all students be successful in learning the core concepts of electricity and magnetism, and how they can be applied to real world technologies like electronics, motors, and infrastructure. Through a combination of theoretical instruction and experiments, students will build a robust foundation in electricity and magnetism, preparing them for a career as a physics teacher. This course emphasizes critical thinking, problem-solving, and the practical application of scientific principles, equipping students with the knowledge and skills necessary for success in the classroom.

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 learner applies principles of electric circuits including voltage, current, and various combinations of resistors and capacitors.*
- *The learner describes magnetic fields and their effects, as well as the forces acting on moving charged particles in magnetic fields and electromagnetic induction.*
- *The learner describes the principles of electric phenomena, including electric charges, electric forces, and electric fields.*

Astrophysics with Lab

Explore the vast and fascinating realm of astrophysics with a hands-on approach to learning about celestial objects, the formation of the universe, and the theories that explain their behavior. Through interactive virtual labs and engaging multimedia resources, you will delve into the properties of stars, planets, galaxies, black holes, and the fundamental forces that govern their motion. Analyze cutting-edge theories of general relativity, dark matter, and dark energy while developing critical analytical skills to interpret astronomical data. This course offers a comprehensive understanding of the universe and prepares you to apply astrophysical concepts in real-world contexts.

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 learner analyzes the theory of general relativity to orbit analysis and gravitational pull.*
- *The learner analyzes variables that interact with celestial objects in the universe.*
- *The learner analyzes various properties of celestial objects and their contribution to the formation of the universe.*

Waves, Acoustics, and Sound

Waves, Acoustics, and Sound provides a comprehensive exploration of fundamental wave properties and their interactions with various media. Designed for learners preparing for roles in science education, it delves into the core concepts of wave behavior, including wave characteristics, factors affecting wave propagation, and the effects of interference. Through detailed lessons on wave properties, interactions, and changes in wave behavior, learners will gain the skills needed to analyze and predict wave phenomena. The course emphasizes practical applications, employing interactive simulations and real-world examples to enhance understanding and prepare learners for effective teaching and application of wave concepts in educational settings.

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 learner analyzes factors that affect waves, including interactions with different types of waves.*
- *The learner analyzes how properties of standing waves, sound waves, and their propagation relate to musical instruments and acoustics.*
- *The learner describes the fundamental properties of waves.*

Secondary Physics Curriculum

Secondary Physics Curriculum. This course offers a comprehensive review for high school physics teachers preparing for the Praxis exam. Explore major scientific discoveries, key engineering innovations, and their societal impacts. Understand ethical issues in scientific research and the principles of effective science communication. Delve into different forms of energy, laws of thermodynamics, and the role of energy and matter in the universe. Study Coulomb's Law, electric circuits, and electromagnetism. Learn how to integrate wave properties, sound waves, and the electromagnetic spectrum into your teaching practice. As this course is focused on Praxis prep, content is conceptual and algebra-based.

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 learner analyzes the impact of science and engineering on society, including investigation methods, technological advancements, and environmental and societal problems.*
- *The learner analyzes the relationship between energy and matter using principles of forces and motion.*
- *The learner analyzes waves, electromagnetic phenomena, and their interactions.*

Accessibility and Accommodations

Western Governors University (WGU) is committed to providing equal access to its academic programs to all qualified students. WGU's Student Disability Services department supports this mission by providing support, resources, advocacy, collaboration, and academic accommodations in accordance with federal and state statutes and regulations to WGU students and prospective students. Prospective and Enrolled Students may initiate the accommodation process at any time during their enrollment at WGU. To initiate the accommodation process, all potential and current WGU students must complete the secure online Accommodation Request Form located at *https://www.wgu.edu/wgu/ada_form*. The Student Disability Services team can be reached at 1-877- 435-7948 x5922 or at *sds@wgu.edu*. Additional information on accommodations can be found in the student handbook Accommodations for Students with Disabilities policy.

Need More Information? WGU Student Services

Student Support Services team members also assist with unresolved concerns to find equitable resolutions. To contact the Student Support 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., and Saturday and Sunday, 10:00 a.m. to 7:00 p.m, mountain standard time.

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