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GED® Integrated Comprehensive	
Program Title	GED® Integrated Preparation Program
Program Number	9900130
Program Length	Varies
Course Title	GED® Integrated Comprehensive
Course Number	9900136
CIP Number	1532.010207
Grade Level	30, 31
Standard Course Length	Varies

PURPOSE

The GED® Integrated course number should only be used for those students enrolled in GED® Integrated and a career and technical course simultaneously. Initially, this course was developed for those programs that are recipients of the FICAPS grant for 2015-2016. However, if you are not a recipient of the grant and would like to implement this program in your agency, please contact the FDOE for more information at 850-245-0450.

The GED® Integrated Comprehensive Preparation Program consists of four content-area assessments: Reasoning through Language Arts, Mathematics Reasoning, Science, and Social Studies. The purpose of the program is to prepare students to obtain the knowledge and skills necessary to pass the Official GED® Tests and be awarded a State of Florida High School Diploma. An additional performance level will certify that the adult student is career and college ready. This program strives to motivate students not only to obtain a GED® diploma, but to enroll in a career and technical course simultaneously and continue their education to earn a postsecondary degree, certificate, or industry certification. In order to be enrolled in the GED® Integrated Comprehensive course number, students must pretest at or above the 9th grade level in at least two of the content areas (reading, language arts, or math).

The GED® Integrated curriculum framework was developed for Florida’s Integrated Career and Academic Preparation System (FICAPS). Students meeting the eligibility requirements listed above may be simultaneously enrolled in GED® Integrated and a career and technical certificate program offered at a technical center/college or state college. This approach combines the GED® instruction with technical training leading to an initial certificate. The standards in this framework are the same as those listed in the GED® Comprehensive course #9900135.

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The FICAPS includes programs/courses that provide a combination of academic and occupational instruction, career guidance, and support services. Integrated programs accelerate students' progress and make the basic skills component more relevant to their interests and career goals. This model has been shown to help adult learners obtain postsecondary certificates and achieve basic skill gains more quickly than when they are enrolled in traditional adult education programs. The goal of the FICAPS is to increase the number of students that earn their high school equivalency diploma and begin the pathway to earn credentials that have labor market value.

PROGRAM COMPONENTS

When implementing the GED® integrated course and the career and technical course the following components are considered essential:

Team Teaching

Identify co-instructors for the GED® I Preparation course and a career and technical clock hour certificate program at district technical centers/colleges or state colleges with at least 50 percent overlap of the instructional time to support both literacy and workforce skills gains. Both instructors work as a collaborative team to design and deliver the program. Both instructors collaborate together prior to entering the classroom for the first time to work on joint learning outcomes and assessments for the students. Both instructors present in the classroom including lecturing, leading group discussions, and managing student projects. The 50% instructional overlap does not need to take place on a daily basis, but cumulatively over the course of the term; for example, if the course material requires more instructional overlap in the beginning of the quarter, but less at the end, the overlap can be "frontloaded" to meet the need.

Career and Technical Course Selection

Review program offerings at local career and technical center/college or state college and determine the career pathway for the FICAPS program that meets the interests and needs of students and the local workforce needs. Career and technical program offerings are aligned with industry needs through a statewide process that identifies targeted occupations meeting high skill, high wage, or high demand criteria. Collaborate with CareerSource regional boards to ensure that there is a strong job demand in the local area for the career pathway chosen.

Partnerships

Adult education in career pathways is part of a larger system and needs to be developed in partnership with other local educational institutions and stakeholders. Community

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and business partnership arrangements include services such as childcare, transportation, case management, job shadowing, and internships. Partnerships must include CareerSource Workforce Regional Boards and One-Stops, technical center/college and/or state college, employers, and others.

Acceleration Strategies

Contextualized learning and the use of blended (online and classroom-based) course designs.

Student Support Services

Comprehensive academic and social student supports (e.g., tutoring, child care, transportation, access to public benefits, financial aid, application process for CTE program, etc.)

Integrated Learning Outcomes

Development of integrated learning outcomes with GED® teacher and the CTE teacher. Student progress is reviewed and program effectiveness evaluated by all faculty and administrators involved.

THE GED® ASSESSMENT

Information on the GED® Assessment and the performance targets and content topics are derived from the Assessment Guide for Educators provided by GED® Testing Service. The manual can be downloaded at <http://gedtestingservice.org>.

Webb’s Depth of Knowledge (DOK) Model

Bloom’s Taxonomy was used to guide the development of test items for the GED® 2002 series. The GED® Testing Service is using Webb’s Depth of Knowledge model to guide test item development for the GED® assessment. In Bloom’s Taxonomy, different verbs represent six levels of cognitive processes. However, unlike Bloom’s system, the DOK levels are not a taxonomical tool that uses verbs to classify the level of each cognitive demand. The DOK is the cognitive demand required to correctly answer test questions. The DOK level describes the kind of thinking involved in the task. A greater DOK level requires greater conceptual understanding and cognitive processing by the students. The DOK model includes 4 levels: (1) recall, (2) basic application of skill/concept, (3) strategic thinking, and (4) extended thinking. Roughly 80 percent of the items across all four tests will be written to DOK levels two and three, and roughly 20 percent will require test-takers to engage level one DOK skills. Level four entails skills required to successfully complete long-term research projects. Therefore, DOK level four is beyond the scope of this assessment.

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PROGRAM STRUCTURE

The GED® Integrated Preparation Program (comprehensive) consists of four courses: Reasoning through Language Arts, Mathematical Reasoning, Social Studies, and Science. The courses are non-graded and characterized by open-entry, open-exit, and/or managed enrollment; self-paced instructional modules; differentiated instruction; flexible schedules; and performance-based evaluation. Agencies are awarded one LCP (V-Y) per test passed by the student. While course lengths can vary, the recommended total length of all four subject areas is 900 hours.

Course Number	Course Title	Length	LCP
9900136	GED® Integrated Comprehensive	Varies	V-Y
9900135	GED® Preparation Comprehensive	Varies	V-Y
9900131	GED® Preparation-Reasoning Through LA		V
9900132	GED® Preparation Social Studies		W
9900133	GED® Preparation Science		X
9900134	GED® Preparation-Mathematical Reasoning		Y

Program procedures include the following:

- A. Determining eligibility for enrollment:
 - 1. Must be 16 years of age or older.
 - 2. Legal withdrawal from the elementary or secondary school with the exceptions noted in Rule 6A-6.014, FAC.
 - 3. Student does not have a State of Florida diploma.
 - 4. Student must pretest at or above the 9th grade level in at least two of the content areas (reading, language arts, or mathematics).
- B. Diagnosing learning difficulties as necessary.
- C. Prescribing individualized instruction.
- D. Managing learning activities.
- E. Evaluating student progress.

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Note: F.S. 1003.435 (4) states that “ a candidate for a high school equivalency diploma shall be at least 18 years of age on the date of the examination, except that in extraordinary circumstances, as provided for in rules of the district school board, a candidate may take the examination after reaching the age of 16.”

SPECIAL NOTES:

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. **Adult students with disabilities must self-identify and request such services.** Students with disabilities may need accommodations in areas such as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

Adult Education Instructor Certification Requirements

As per section 1012.39 (1)(b), F.S., each school district shall establish the minimal qualifications for part-time and full-time teachers in adult education programs.

Career and Adult Education Planning

The following career development standards are designed to be integrated into the GED® frameworks to assist students with career exploration and planning. Students can access Florida’s career information delivery system or a comparable system for career exploration and development of a career plan.

- CP. GED.01 Develop skills to locate, evaluate, and interpret career information.
- CP. GED.02 Identify interests, skills, and personal preferences that influence career and education choices.
- CP.GED.03 Identify career cluster and related pathways that match career and education goals.
- CP.GED.04 Develop and manage a career and education plan.

Digital Literacy (Technology)

Computer skills have become essential in today’s world. Students use a variety of technology tools such as calculators, cell phones, and computers for multiple uses; communicate with friends and family, apply for work, classroom instruction, testing, and in the workplace. Technology standards are designed to be integrated in the GED® instruction.

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- DL.GED.01 Develop basic keyboarding and numerical keypad skills.
- DL.GED.02 Produce a variety of documents such as research papers, resumes, charts, and tables using word processing programs.
- DL.GED.03 Use Internet search engines such as Google, Bing, or Yahoo to collect data and information.
- DL.GED.04 Practice safe, legal, and responsible sharing of information, data, and opinions online.

Workforce Preparation Activities

The term “workforce preparation activities” means activities, programs, or services designed to help an individual acquire a combination of basic academic skills, critical thinking skills, digital literacy skills, and self-management skills, including competencies in utilizing resources, using information, working with others, understanding systems, and obtaining skills necessary for successful transition into and completion of postsecondary education or training, or employment. (Workforce Innovation and Opportunity Act (WIOA), 2014).

The following activities should be integrated into the classroom instruction:

Critical Thinking	All students will make decisions and solve problems by specifying goals, identifying resources and constraints, generating alternatives, considering impacts, choosing appropriate alternatives, implementing plans of action, and evaluating results.
Teamwork	All students will learn to work cooperatively with people with diverse backgrounds and abilities. Students will identify with the group’s goals and values, learn to exercise leadership, teach others new skills, serve clients or customers, and contribute with ideas, suggestions, and work efforts.
Employment	All students will develop job search skills for employment such as completing an application, resume, cover letter, thank you letter, and interviewing techniques.
Self-Management	All students should display personal qualities such as responsibility, self-management, self-confidence, ethical behavior, and respect for self and others.
Utilizing Resources	All students will learn to identify, organize, plan, and allocate resources (such as time, money, material, and human resources) efficiently and effectively.
Using Information	All students will acquire, organize, interpret, and evaluate information in post-secondary, training, or work situations.

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Understanding Systems All students will learn to understand, monitor, and improve complex systems, including social, technical, and mechanical systems, and work with and maintain a variety of technologies.

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GED® Integrated Comprehensive- Reasoning through Language Arts (RLA) (LCP V)

The GED® RLA test items are based on assessment targets derived from the Florida State Standards and similar career-and-college readiness standards.

Because the strongest predictor of career and college readiness is the ability to read and comprehend complex texts, especially nonfiction, the RLA Test will include texts from both academic and workplace contexts. These texts reflect a range of complexity levels in terms of ideas, syntax, and style. The writing tasks, or Extended Response (ER) items, requires test takers to analyze given source texts and use evidence drawn from the text(s) to support their answers. The RLA Test includes the following:

- Seventy-five percent of the texts in the exam will be informational texts (including nonfiction drawn from the science and the social studies as well as a range of texts from workplace contexts); 25 percent will be literature.
- For texts in which comprehension hinges on vocabulary, the focus will be on understanding words that appear frequently in texts from a wide variety of disciplines and, by their definition, are not unique to a particular discipline.
- U.S. founding documents and the “Great American Conversation” that followed are the required texts for study and assessment.
- The length of the texts included in the reading comprehension component will vary between 450 and 900 words.
- Reading and writing standards will also be measured in the GED® Social Studies Test, and the reading standards will be measured in the GED® Science Test.

The GED® RLA test will focus on the fundamentals in three major content areas: Reading, Language Arts and Writing. Students will achieve the ability to read closely, the ability to write clearly, and the ability to edit and understand the use of standard written English in context.

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READING STANDARDS	
R.1	Determine central ideas or themes of texts, analyze their development, and summarize the key supporting details and ideas.
R.1.a	Comprehend explicit details and main ideas in text.
R.1.b	Summarize details and ideas in text.
R.1.c	Make sentence-level inferences about details that support main ideas.
R.1.d	Infer implied main ideas in paragraphs or whole texts.
R.1.e	Determine which detail(s) support(s) a main idea.
R.1.f	Identify a theme, or identify which element(s) in a text support a theme.
R.1.g	Make evidence-based generalizations or hypotheses based on details in text, including clarifications, extensions, or applications of main ideas to new situations.
R.1.h	Draw conclusions or make generalizations that require mixing several main ideas in text.
R.2	Analyze how individuals, events, and ideas develop and interact over the course of a text.
R.2.a	Order sequences of events in texts.
R.2.b	Make inferences about plot/sequence of events, characters/people, settings, or ideas in texts.
R.2.c	Analyze relationships within texts, including how events are important in relation to plot or conflict; how people, ideas, or events are connected, developed, or distinguished; how events contribute to theme or relate to key ideas; or how a setting or context shapes structure and meaning.
R.2.d	Infer relationships between ideas in a text (e.g., an implicit cause and effect, parallel, or contrasting relationship).
R.2.e	Analyze the roles that details play in complex literary or informational texts.
R.3.2; L.4.2	Interpret words and phrases that appear frequently in texts from a wide variety of disciplines, including determining connotative and figurative meanings from context and analyzing how specific word choices shape meaning or tone.
R.3.1/L.4.1	Determine the meaning of words and phrases as they are used in a text, including determining connotative and figurative meanings from context.

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R.3.2/L.4.2	Analyze how meaning or tone is affected when one word is replaced with another.
R.4.3/L.4.3	Analyze the impact of specific words, phrases, or figurative language in text, with a focus on an author’s intent to convey information or construct an argument.
R.4	Analyze the structure of texts, including how specific sentences or paragraphs relate to each other and the whole.
R.4.a	Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.
R.4.b	Analyze the structural relationship between adjacent sections of text (e.g., how one paragraph develops or refines a key concept or distinguishing one idea from another).
R.4.c	Analyze transitional language or signal words (words that indicate structural relationships, such as consequently, nevertheless, otherwise) and determine how they refine meaning, emphasize certain ideas or reinforce an author’s purpose.
R.4.d	Analyze how the structure of a paragraph, section, or passage shapes meaning, emphasizes key ideas, or supports an author’s purpose.
R.5	Determine an author’s purpose or point of view in a text and explain how it is conveyed and shapes the content and style of a text.
R.5.a	Determine an author’s point of view or purpose of a text.
R.5.b	Analyze how the author distinguishes his or her position from that of others or how an author acknowledges and responds to conflicting evidence or viewpoints.
R.5.c	Infer an author’s implicit and explicit purposes based on details in text.
R.5.d	Analyze how an author uses rhetorical techniques to advance his or her point of view or achieve a specific purpose (e.g., analogies, enumerations, repetition and parallelism, juxtaposition of opposites, qualifying statements).
R.6	Delineate and evaluate the argument and specific claims in a text, including if the reasoning was valid, as well as the relevance and sufficiency of the evidence.

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R.7.1	Delineate the specific steps of an argument the author puts forward, including how the argument’s claims build on one another.
R.8.a	Identify specific pieces of evidence an author uses in support of claims or conclusions.
R.8.b	Evaluate the relevance and sufficiency of evidence offered in support of a claim.
R.8.c	Distinguish claims that are supported by reason and evidence from claims that are not.
R.8.d	Assess whether the reasoning is valid; identify false reasoning in an argument and evaluate its impact.

R.8.e	Identify an underlying premise or assumption in an argument and evaluate the logical support and evidence provided.
R.9 & R.7	Analyze how two or more texts address similar themes or topics.
R.9.a/R.7.a	Draw specific comparisons between two texts that address similar themes or topics, or between information presented in different formats (e.g., between information presented in text and information or data summarized in a table or timeline).
R.9.b	Compare two passages in a similar or closely related genre that share ideas or themes, focusing on similarities and/or differences in perspective, tone, style, structure, purpose, or overall impact.
R.9.c	Compare two argumentative passages on the same topic that present opposing claims (either main or supporting claims) and analyze how each text emphasizes different evidence or advances a different interpretation of facts.
R.7.b	Analyze how data or quantitative and/or visual information extends, clarifies, or contradicts information in text or determines how data supports an author’s argument.
R.7.c	Compare two passages that present related ideas or themes in different genre or formats (e.g., a feature article and an online FAQ or fact sheet) in order to evaluate differences in scope, purpose, emphasis, intended audience, or overall impact when comparing.

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R.7.d	Compare two passages that present related ideas or themes in different genre or formats in order to synthesize details, draw conclusions, or apply information to new situations.
	LANGUAGE STANDARDS
L.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
L.1.a	Edit to correct errors involving frequently confused words and homonyms, including contractions (passed, past; two, too, to; there, their, they're; knew, new; it's, its).
L.1.b	Edit to correct errors in straightforward subject-verb agreement.
L.1.c	Edit to correct errors in pronoun usage, including pronoun-antecedent agreement, unclear pronoun references, and pronoun case.
L.1.d	Edit to eliminate nonstandard or informal usage (e.g., correctly use tries to win the game instead of try and win the game).
L.1.e	Edit to eliminate dangling or misplaced modifiers or illogical word order (e.g., correctly use to meet almost all requirements instead of to almost meet all requirements).
L.1.f	Edit to ensure parallelism and proper subordination and coordination.
L.1.g	Edit to correct errors in subject-verb or pronoun antecedent agreement in more complicated situations (e.g., with compound subjects, interceding phrases, or collective nouns).
L.1.h	Edit to eliminate wordiness or awkward sentence construction.
L.1.i	Edit to ensure effective use of transitional words, conjunctive adverbs, and other words and phrases that support logic and clarity.
L.2	Demonstrate command of the conventions of standard English capitalization and punctuation when writing.
L.2.a	Edit to ensure correct use of capitalization (e.g., proper nouns, titles, and beginnings of sentences).
L.2.b	Edit to eliminate run-on sentences, fused sentences, or sentence fragments.
L.2.c	Edit to ensure correct use of apostrophes with possessive nouns.

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L.2.d	Edit to ensure correct use of punctuation (e.g., commas in a series or in appositives and other nonessential elements, end marks, and appropriate punctuation for clause separation).
WRITING STANDARDS	
W.1	Determine the details of what is explicitly stated and make logical inferences or valid claims that square with textual evidence
W.2	Produce and extended analytical response in which the writer introduces the idea(s) or claim(s) clearly; creates an organization that logically sequences information; develops the idea(s) or claim(s) thoroughly with well-chosen examples, facts, or details from the text; and maintains a coherent focus.
W.3	Write clearly and demonstrate sufficient command of standard English conventions

Notes:

- Information provided on the GED® tests is based on the *Assessment Guide for Educators*, GED® Testing Service.

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GED® Integrated Comprehensive-Mathematical Reasoning (LCP Y)

The Mathematical Reasoning test will focus on the fundamentals of mathematics in two major content areas: quantitative problem solving and algebraic problem solving. Students will achieve a deeper conceptual understanding, procedural skill and fluency, and the ability to apply these fundamentals in realistic situations.

The standards in this framework are based on the knowledge and skills that will be measured on the GED® assessment. In addition to the content-based indicators listed with each performance target, the GED® mathematics test will also focus on reasoning skills, as embodied by the GED® Mathematical Practices. The practices and standards in this framework are based on Florida State Standards for Mathematics, the Process Standards found in the Principles and Standards for School Mathematics, published by the National Council of Teachers of Mathematics and similar career-and-college readiness standards. The mathematical practices provide specifications for assessing real-world problem-solving skills in a mathematical context rather than requiring students only to memorize, recognize and apply a long list of mathematical algorithms. See Chapter Two for more information on Mathematical Practices in the Assessment Guide for Educators which can be downloaded at <http://gedtestingservice.org>.

Range of Depth of Knowledge (DOK)	Mathematical Practices
1-2 1-3 2-3 1-2 1-3	<p>MP.1 Building Solution Pathways and Lines of Reasoning</p> <ul style="list-style-type: none"> a. Search for and recognize entry points for solving a problem. b. Plan a solution pathway or outline a line of reasoning. c. Select the best solution pathway, according to given criteria. d. Recognize and identify missing information that is required to solve a problem. e. Select the appropriate mathematical technique(s) to use in solving a problem or a line of reasoning.

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1-2 1-2 2-3	<p>MP2. Abstracting Problems</p> <ul style="list-style-type: none"> a. Represent real world problems algebraically. b. Represent real world problems visually. c. Recognize the important and salient attributes of a problem.
1-3 1-3 2-3	<p>MP.3 Furthering Lines of Reasoning</p> <ul style="list-style-type: none"> a. Build steps of a line reasoning or solution pathway, based on previous step or givens. b. Complete the lines of reasoning of others. c. Improve or correct a flawed line of reasoning.
1-2 1-2 1-2	<p>MP.4 Mathematical Fluency</p> <ul style="list-style-type: none"> a. Manipulate and solve arithmetic expressions. b. Transform and solve algebraic expressions. c. Display data or algebraic expressions graphically.
2-3 2-3 2-3	<p>MP.5 Evaluating Reasoning and Solution Pathways</p> <ul style="list-style-type: none"> a. Recognize flaws in others' reasoning. b. Recognize and use counterexamples. c. Identify the information required to evaluate a line of reasoning.

	Quantitative Problem Solving Standards and Content Indicators
Q.1	Apply number sense concepts, including ordering rational numbers, absolute value, multiples, factors, and exponents
Q.1.a	Order fractions and decimals, including on a number line.

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Q.1.b	Apply number properties involving multiples and factors, such as using the least common multiple, greatest common factor, or distributive property to rewrite numeric expressions.
Q.1.c	Apply rules of exponents in numerical expressions with rational exponents to write equivalent expressions with rational exponents.
Q.1.d	Identify absolute value or a rational number as its distance from zero on the number line and determine the distance between two rational numbers on the number line, including using the absolute value of their difference.
Q.2	Add, subtract, multiply, divide, and use exponents and roots of rational, fraction, and decimal numbers
Q.2.a	Perform addition, subtraction, multiplication, and division on rational numbers.
Q.2.b	Perform computations and write numerical expressions with squares and square roots of rational numbers.
Q.2.c	Perform computations and write numerical expressions with cubes and cube roots of rational numbers.
Q.2.d	Determine when a numerical expression is undefined.
Q.2.e	Solve single-step or multistep real-world arithmetic problems involving the four operations with rational numbers, including those involving scientific notation.
Q.3	Calculate and use ratios, percent, and scale factors
Q.3.a	Compute unit rates. Examples include but are not limited to: unit pricing, constant speed, persons per square mile, BTUs (British thermal units) per cubic foot.
Q.3.b	Use scale factors to determine the magnitude of a size change. Convert between actual drawings and scale drawings.
Q.3.c	Solve multistep, real-world arithmetic problems using ratios or proportions including those that require converting units of measure.
Q.3.d	Solve two-step, real-world arithmetic problems involving percentages. Examples include but are not limited to: simple interest, tax, markups and markdowns, gratuities and commissions, percent increase and decrease.
Q.4	Calculate dimensions, perimeter, circumference, and area of two-dimensional figures
Q.4.a	Compute the area and perimeter of triangles and rectangles. Determine side lengths of triangles and rectangles when given area or perimeter.

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Q.4.b	Compute the area and circumference of circles. Determine the radius or diameter when given area or circumference.
Q.4.c	Compute the perimeter of a polygon. Given a geometric formula, compute the area of a polygon. Determine side lengths of the figure when given the perimeter or area.
Q.4.d	Compute perimeter and area of 2-D composite geometric figures, which could include circles, given geometric formulas as needed.
Q.4.e	Use the Pythagorean theorem to determine unknown side lengths in a right triangle.
Q.5	Calculate dimensions, surface area, and volume of three-dimensional figures
Q.5.a	When given geometric formulas, compute volume and surface area of rectangular prisms. Solve for side lengths or height, when given volume or surface areas.
Q.5.b	When given geometric formulas, compute volume and surface area of cylinders. Solve for height, radius, or diameter when given volume or surface area.
Q.5.c	Use geometric formulas to compute volume and surface area of right prisms. Solve for side lengths or height, when given volume or surface area.
Q.5.d	When given geometric formulas, compute volume and surface area of right pyramids and cones. Solve for side lengths, height, radius, or diameter when given volume or surface area.
Q.5.e	When given geometric formulas, compute volume and surface area of spheres. Solve for radius or diameter when given the surface area.
Q.5.f	Compute surface area and volume of composite 3-D geometric figures, given geometric formulas as needed.
Q.6	Interpret and create data displays
Q.6.a	Represent, display, and interpret categorical data in bar graphs or circle graphs.
Q.6.b	Represent, display, and interpret data involving one variable plots on the real number line including dot plots, histograms, and box plots.
Q.6.c	Represent, display, and interpret data involving two variables in tables and the coordinate plane including scatter plots and grants.

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Q.7	Calculate and use mean, median, mode, and weighted average
Q.7.a	Calculate the mean, median, mode and range. Calculate a missing data value, given the average and all the missing data values but one, as well as calculating the average, given the frequency counts of all the data values, and calculating a weighted average.
Q.8	Utilize counting techniques and determine probabilities
Q.8.a	Use counting techniques to solve problems and determine combinations and permutations.
Q.8.b	Determine the probability of simple and compound events.
Algebraic Problem Solving Standards and Content Indicators	
A.1	Write, evaluate, and compute with expressions and polynomials
A.1.a	Add, subtract, factor, multiply, and expand linear expressions with rational coefficients.
A.1.b	Evaluate linear expressions by substituting integers for unknown quantities.
A.1.c	Write linear expressions as part of word-to-symbol translations or to represent common settings.
A.1.d	Add, subtract, multiply polynomials, including multiplying two binomials, or divide factorable polynomials.
A.1.e	Evaluate polynomial expressions by substituting integers for unknown quantities.
A.1.f	Factor polynomial expressions.
A.1.g	Write polynomial expressions as part of word-to-symbol translations or to represent common settings.
A.1.h	Add, subtract, multiply and divide rational expressions.
A.1.i	Evaluate rational expressions by substituting integers for unknown quantities.
A.1.j	Write rational expressions as part of word-to-symbol translations or to represent common settings.

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A.2	Write, manipulate, solve, and graph linear equations
A.2.a	Solve one-variable linear equations with rational number coefficients, including equations for which solutions require expanding expressions using the distributive property and collecting like terms or equations with coefficients represented by letters.
A.2.b	Solve real-world problems involving linear equations.
A.2.c	Write one-variable and multi-variable linear equations to represent context.
A.2.d	Solve a system of two simultaneous linear equations by graphing, substitution, or linear combination. Solve real-world problems leading to a system of linear equations.
A.3	Write, manipulate, solve, and graph linear inequalities
A.3.a	Solve linear inequalities in one variable with rational number coefficients.
A.3.b	Identify or graph the solution to a one variable linear inequality on a number line.
A.3.c	Solve real-world problems involving inequalities.
A.3.d	Write linear inequalities in one variable to represent context.
A.4	Write, manipulate, and solve quadratic equations
A.4.a	Solve quadratic equations in one variable with rational coefficients and real solutions, using appropriate methods (e.g., quadratic formula, completing the square, factoring, and inspection).
A.4.b	Write one-variable quadratic equations to represent context.
A.5	Connect and interpret graphs and functions
A.5.a	Locate points in the coordinate plane.
A.5.b	Determine the slope of a line from a graph, equation, or table.
A.5.c	Interpret unit rate as the slope in a proportional relationship.
A.5.d	Graph two-variable linear equations.

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A.5.e	For a function that models a linear or nonlinear relationship between two quantities, interpret key features of graphs and tables in terms of quantities, and sketch graphs showing key features of graphs and tables in terms of quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries, end behavior, and periodicity.
A.6	Connect coordinates, lines, and equations
A.6.a	Write the equation of a line with a given slope through a given point.
A.6.b	Write the equation of a line passing through two given distinct points.
A.6.c	Use slope to identify parallel and perpendicular lines and to solve geometric problems.
A.7	Compare, represent, and evaluate functions
A.7.a	Compare two different proportional relationships represented in different ways. Examples include but are not limited to: compare a distance-time graph to a distance-time equation to determine which of two moving objects has a greater speed.
A.7.b	Represent or identify a function in a table or graph as having exactly one output (one element in the range) for each input (each element in the domain).
A.7.c	Evaluate linear and quadratic functions for values in their domain when represented using function notation.
A.7.d	Compare properties of two linear or quadratic functions each represented in a different way (algebraically, numerically in tables, graphically or by verbal descriptions). Examples include but are not limited to: given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.

Notes:

- Information on the GED® tests is based on the *Assessment Guide for Educators*, GED® Testing Service

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GED® Integrated Comprehensive-Social Studies (LCP W)

The purpose of the Social Studies component of the GED® program is to prepare students to pass the GED® Social Studies Test. This test will focus on the fundamentals of social studies reasoning, striking a balance of deeper conceptual understanding, procedural skill and fluency, and the ability to apply these fundamentals in realistic situations. Four major content domains will be addressed: civics and government, United States history, economics, and geography and the world.

The GED® Social Studies test items are based on assessment targets identified by GED® Testing Service and are divided into two sections: the practices and the content topics. Each content topic has been translated into a standard including sub-content areas.

Each item on the Social Studies Test will be aligned to one social studies practice and one content topic/subtopic.

Instruction on Social Studies Content Topic

The content topics are designed to provide context for measuring the skills defined in the social studies practices listed in this framework.

As in the previous version of the GED® Social Studies Assessment Targets, the social studies practices maintain a close relationship with the social studies content topics. More specifically, the primary focus of the GED® Social Studies Test continues to be the measurement of essential reasoning skills applied in social studies context. However, test-takers should be familiar with each of the basic concepts enumerated in the social studies content topics and subtopics, and they should be able to recognize and understand, in context, each of the terms listed there. For

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example, a question may include answer options and stimuli that contain specific terms drawn from the content subtopics; however, test-takers will never be asked to formulate their own definition of a term without the item providing sufficient contextual support for such a task.

Social Studies Content Topics Matrix

The Matrix below gives a condensed summary of the Social Studies content topics. The tables on the following pages will include the content topics written into student standards along with sub-topics for each standard. The social studies content topics, which are drawn from these four domains, will provide context for measuring a test-taker’s ability to apply the reasoning skills described in the practices.

Themes	Social Studies Content Topics			
	Civics & Government 50%*	U.S. History 20%*	Economics 15%*	Geography and the World 15%*
I. Development of Modern Liberties and Democracy	1. Types of modern & historical governments 2. Principles that have contributed to development of American constitutional democracy 3. Structure and design of United States Government 4. Individual rights and civic responsibilities	1. Key historical documents that have shaped American constitutional government 2. Revolutionary and Early Republic Periods 3. Civil War & Reconstruction 4. Civil Rights Movement	1. Key economic events that have shaped American government and policies 2. Relationship between political and economic freedoms	1. Development of classical civilizations

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<p>II. Dynamic Responses in Societal Systems</p>	<p>e. Political parties, campaigns, and elections in American politics 6. Contemporary public policy</p>	<p>5. European population of the Americas 6. World War I & II 7. The Cold War 8. American foreign policy since 9/11</p>	<p>3. Fundamental economic concepts 4. Microeconomics & macroeconomics 5. Consumer economics 6. Economic causes & impacts of wars 7. Economic drivers of exploration and colonization</p>	<p>2. Relationships between the environment and societal development 3. Borders between peoples and nations 4. Human migration</p>
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Social Studies Practices
SSP.1 Draw Conclusions and Make Inferences
<p>SSP.1.a. Determine the details of what is explicitly stated in primary and secondary sources and make logical inferences or valid claims based on evidence. SSP.1.b. Cite or identify specific evidence to support inferences or analyses of primary and secondary sources, attending to the precise details of explanations or descriptions of a process, event, or concept.</p>
SSP.2 Determine Central Ideas, Hypotheses and Conclusions
<p>SSP.2.a. Determine the central ideas or information of a primary or secondary source document, corroborating or challenging conclusions with evidence. SSP.2.b. Describe people, places, environments, processes, and events, and the connections between and among them.</p>
SSP.3 Analyze Events and Ideas

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<p>SSP.3.a. Identify the chronological structure of a historical narrative and sequence steps in a process.</p> <p>SSP.3.b. Analyze in detail how events, processes, and ideas develop and interact in a written document; determine whether earlier events caused later ones or simply preceded them.</p> <p>SSP.3.c. Analyze cause-and-effect relationships and multiple causation, including action by individuals, natural and societal processes, and the influence of ideas.</p> <p>SSP.3.d. Compare differing sets of ideas related to political, historical, economic, geographic, or societal contexts; evaluate the assumptions and implications inherent in differing positions.</p>
<p>SSP.4 Interpret Meaning of Symbols, Words and Phrases</p>
<p>SSP.4.a. Determine the meaning of words and phrases as they are used in context, including vocabulary that describes historical, political, social, geographic, and economic aspects of social studies.</p>
<p>SSP.5 Analyze Purpose and Point of View</p>
<p>SSP.5.a. Identify aspects of a historical document that reveals an author’s point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts) SSP.5.b. Identify instances of bias or propagandizing.</p> <p>SSP.5.c. Analyze how a historical context shapes an author’s point of view.</p> <p>SSP.5.d. Evaluate the credibility of an author in historical and contemporary political discourse.</p>
<p>SSP.6 Integrate Content Presented in Different Ways</p>
<p>SSP.6.a. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.</p>
<p>SSP.6.b. Analyze information presented in a variety of maps, graphic organizers, tables, and charts; and in a variety of visual sources such as artifacts, photographs, political cartoons.</p> <p>SSP.6.c. Translate quantitative information expressed in words in a text into visual form (e.g., table or chart); translate information expressed visually or mathematically into words.</p>
<p>SSP.7 Evaluate Reasoning and Evidence</p>
<p>SSP.7.a. Distinguish among fact, opinion, and reasoned judgment in a primary or secondary source document</p> <p>SSP.7.b. Distinguish between unsupported claims and informed hypotheses grounded in social studies evidence.</p>

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SSP.8 Analyze Relationships between Texts
SSP.8.a. Compare treatments of the same social studies topic in various primary and secondary sources, noting discrepancies between and among the sources.
SSP.9 Write Analytic Response to Source Texts **
SSP.9.a. Produce writing that develops the idea(s), claim(s) and/or argument(s) thoroughly and logically, with well-chosen examples, facts, or details from primary and secondary source documents. SSP.9.b. Produce writing that introduces the idea(s) or claim(s) clearly; creates an organization that logically sequences information; and maintains a coherent focus. SSP.9.c. Write clearly and demonstrate sufficient command of standard English conventions.
SSP.10 Read and Interpret Graphs, Charts and Other Data Representation
SSP.10.a. Interpret, use, and create graphs (e.g., scatterplot, line, bar, circle) including proper labeling. Predict reasonable trends based on the data (e.g., do not extend trend beyond a reasonable limit). SSP.10.b. Represent data on two variables (dependent and independent) on a graph; analyze and communicate how the variables are related. SSP.10.c. Distinguish between correlation and causation.
SSP.11 Measure the Center of a Statistical Dataset
SSP.11.a. Calculate the mean, median, mode, and range of a dataset.

*The GED® social studies practices are derived from the National Curriculum Standards for Social Studies: A Framework for Teaching Learning, and Assessment (2010), and National Standards for History Revised Edition (1996).

**The Extended Response writing task will require test-takers to apply a range of Social Studies Practices; however, the practices under SSP.9 will be of primary importance in the writing task, and these practices will only be assessed through the writing task.

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Social Studies Standards	
Civics and Government	
CG.1	<p>Describe types of modern and historical governments that contributed to the development of American constitutional democracy.</p> <ul style="list-style-type: none"> CG.1.a. direct democracy CG.1.b. representative democracy CG.1.c. parliamentary democracy CG.1.d. presidential democracy CG.1.e. monarchy and other types
CG.2	<p>Describe the principles that have contributed to the development of American constitutional democracy.</p> <ul style="list-style-type: none"> CG.2.a. natural rights philosophy CG.2.b. popular sovereignty and consent of the governed CG.2.c. constitutionalism CG.2.d. majority rule and minority rights CG.2.e. checks and balances CG.2.f. separation of powers CG.2.g. rule of law CG.2.h. individual rights CG.2.i. federalism
CG.3	<p>Analyze the structure and design of United States Government.</p> <ul style="list-style-type: none"> CG.3.a. Structure, powers, and authority of the federal executive, judicial, and legislative branches CG.3.b. Individual governmental positions (e.g., president, speaker of the house, cabinet secretary, etc.) CG.3.c. Major powers and responsibilities of the federal and state governments CG.3.d. Shared powers CG.3.e. Amendment process CG.3.f. Governmental Departments and Agencies
CG.4	<p>Describe individual rights and civic responsibilities.</p> <ul style="list-style-type: none"> CG.4.a. The Bill of Rights CG.4.b. Personal and civil liberties of citizens

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CG.5	Describe political parties, campaigns, and elections in American politics. CG.5.a. Political parties CG.5.b. Interest groups CG.5.c. Political campaigns, elections and the electoral process
CG.6	Define contemporary public policy

United States History	
USH.1	Explain the ideas and significance of key historical documents that have shaped American constitutional government. USH.1.a. Magna Carta USH.1.b. Mayflower Compact USH.1.c. Declaration of Independence USH.1.d. United States Constitution USH.1.e. Martin Luther King’s Letter from the Birmingham Jail USH.1.f. Landmark decisions of the United States Supreme Court and other Key documents)
USH.2	Describe the causes and consequences of the wars during the Revolutionary and Early Republic Periods. USH.2.a. Revolutionary War USH.2.b. War of 1812 USH.2.c. George Washington USH.2.d. Thomas Jefferson USH.2.e. Articles of Confederation USH.2.f. Manifest Destiny USH.2.g. U.S. Indian Policy
USH.3	Examine causes and consequences of the Civil War and Reconstruction and its effects on the American people. USH.3.a. Slavery USH.3.b. Sectionalism USH.3.c. Civil War Amendments USH.3.d. Reconstruction policies

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USH.4	<p>Identify the expansion of civil rights by examining the principles contained in primary documents and events.</p> <ul style="list-style-type: none"> USH.4.a. Jim Crow laws USH.4.b. Women’s suffrage USH.4.c. Civil Rights Movement USH.4.d. Plessy vs. Ferguson and Brown vs. Board of Education USH.4.e. Warren court decisions
USH.5	<p>Describe the impact of European settlement on population of the America’s.</p>
USH.6	<p>Explain the significant causes, events, figures, and consequences of World Wars I & II.</p> <ul style="list-style-type: none"> USH.6.a. Alliance system USH.6.b. Imperialism, nationalism, and militarism USH.6.c. Russian Revolution USH.6.d. Woodrow Wilson USH.6.e. Treaty of Versailles and League of Nations USH.6.f. Neutrality Acts USH.6.g. Isolationism USH.6.h. Allied and Axis Powers USH.6.i. Fascism, Nazism, and totalitarianism USH.6.j. The Holocaust USH.6.k. Japanese-American internment USH.6.l. Decolonization USH.6.m. GI Bill
USH.7	<p>Describe the significant events and people from the Cold War era.</p> <ul style="list-style-type: none"> USH.7.a. Communism and capitalism USH.7.b. NATO and the Warsaw Pact USH.7.c. U.S. maturation as an international power USH.7.d. Division of Germany, Berlin Blockade and Airlift USH.7.e. Truman Doctrine USH.7.f. Marshall Plan USH.7.g. Lyndon B. Johnson and The Great Society USH.7.h. Richard Nixon and the Watergate scandal USH.7.i. Collapse of U.S.S.R. and democratization of Eastern Europe
USH.8	<p>Analyze the impact of the September 11, 2001 attacks on the United States foreign policy.</p>

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Economics	
E.1	Describe key economic events that have shaped American government and policies.
E.2	Explain the relationship between political and economic freedoms
E.3	Describe common economic terms and concepts. E.3.a Markets E.3.b. Incentives E.3.c. Monopoly and competition E.3.d. Labor and capital E.3.e. Opportunity cost E.3.f. Profit E.3.g. Entrepreneurship E.3.h. Comparative advantage E.3.i. Specialization E.3.j. Productivity E.3.k. interdependence
E.4	Describe the principles of Microeconomics and Macroeconomics. E.4.a. Supply, demand and price E.4.b. Individual choice E.4.c. Institutions E.4.d. Fiscal and monetary policy E.4.e. Regulation and costs of government policies E.4.f. Investment E.4.g. Government and market failures E.4.h. Inflation and deflation E.4.i. Gross domestic product (GDP) E.4.j. Unemployment E.4.k. Tariffs
E.5	Describe consumer economics E.5.a. Types of credit E.5.b. Savings and banking E.5.c. Consumer credit laws
E.6	Examine the economic causes and impact on wars.
E.7	Describe the economic drivers of exploration and colonization in the Americas.

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E.8	Explain the relationship between the Scientific and Industrial Revolutions.
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Geography	
G.1	Describe how geography affected the development of classical civilizations.
G.2	Describe the relationships between the environment and societal development. G.2.a. Nationhood and statehood G.2.b. Sustainability G.2.c. Technology
	G.2.d. Natural resources G.2.e. Human changes to the environment
G.3	Describe the concept of borders between peoples and nations. G.3.a. Concepts of region and place G.3.b. Natural and cultural diversity G.3.c. Geographic tools and skills
G.4	Describe the forms of human migration. G.4.a. Immigration, emigration and Diaspora G.4.b. Culture, cultural diffusion and assimilation G.4.c. Population trends and issues G.4.d. Rural and urban settlement

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GED® Integrated Comprehensive-Science (LCP X)

The purpose of the Science course of the GED® program is to prepare students to pass the GED® Science test. The framework includes science practices and content standards. Science practices are described as skills that are important to scientific reasoning in both textual and quantitative contexts. The science practices are based on skills included in the Florida standards.

This test will focus on the fundamentals of science reasoning, striking a balance of deeper conceptual understanding, procedural skill and fluency, and the ability to apply these fundamentals in realistic situations. Three major content domains will be addressed: life science, physical science and Earth and space science. The test will include items that test textual analysis and understanding, data representation and inference skills, as well as problem solving with science content. Approximately 50 percent of the items will be presented in item scenarios, in which a single stimulus (which may be textual, graphic or a combination of both) serves to inform two to three items. The rest of the items will be discrete.

Instruction on Science Content Topics

The content topics are designed to provide context for measuring the skills defined in the science practices listed in this framework.

As in the previous version of the GED® Science Assessment Targets, the science practices maintain a close relationship with the science content topics. More specifically, the primary focus of the GED® Science Test continues to be the measurement of essential reasoning skills applied in scientific context. However, test-takers should still be broadly and generally familiar with each of the basic concepts enumerated in the science content topics and subtopics, and they should be able to recognize and understand, in context, each of the terms listed there. The stimuli about which each question pertains will provide necessary details about scientific figures, formulas, and other key principles. For example, a question may include answer options and stimuli that contain specific terms drawn from the content subtopics; however, test-takers will never be asked to formulate their own definition of a term without the item providing sufficient contextual support for such a task.

The Science Content Topics Matrix below identifies the major topics in science and shows the relationship between each content topic and each focusing theme. The percentage of test questions on each content topic is listed.

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	Science Content Topics		
Focusing Themes	Life Science (L) 40%	Physical Science (P) 40%	Earth & Space Science (ES) 20%
Human and Health Living Systems	a. Human body and health b. Organization of life (structure and function of life) c. Molecular basis for heredity d. Evolution	a. Chemical properties and reactions related to human systems	a. Interactions between Earth’s systems and living things
Energy & Related Systems	e. Relationships between life functions and energy intake f. Energy flows in ecologic networks (ecosystems)	b. conservation, transformation, and flow of energy c. Work, motion, and forces	b. Earth and its system components and interactions c. Structure and organization of the cosmos

The Science Practices are derived from the Florida State Standards and/or practices from the National Research Council’s *A Framework for K-12 Science Education* which identifies eight key practices that students should learn, such as asking questions and defining problems, analyzing and interpreting data, and constructing explanations and designing solutions. These practices should be integrated with study of the content topics included in this framework. Each item on the Science Test will be aligned to one science practice and one content topic.

SCIENCE PRACTICES

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SP.1 Comprehending Scientific Presentations

SP.1.a Understand and explain textual scientific presentations

Sp.1.b Determine the meaning of symbols, terms and phrases as they are used in scientific presentations.

SP.1.c Understand and explain a non-textual scientific presentations

SP.2 Investigation Design (Experimental and Observational)

SP.2.a. Identify possible sources of error and alter the design of an investigation to ameliorate that error

SP.2.b. Identify and refine hypotheses for scientific investigations

SP.2.c. Identify the strength and weaknesses of one or more scientific investigation (i, e, experimental or observational) designs

SP.2.d. Design a scientific investigation

SP.2.e. Identify and interpret independent and dependent variables in scientific investigations

SP.3 Reasoning from Data

SP.3.a. Cite specific textual evidence to support a finding or conclusion.

SP.3.b. Reason from data or evidence to a conclusion.

SP.3.c. Make a prediction based upon data or evidence.

SP.3.d. Using sampling techniques to answer scientific questions.

SP.4 Evaluating Conclusions with Evidence

SP.4.a. Evaluate whether a conclusion or theory is supported or challenged by particular data or evidence.

SP.5 Working with Findings

SP.5.a. Reconcile multiple findings, conclusions or theories.

SP.6 Expressing Scientific Information

SP.6.a. Express scientific information or findings visually.

SP.6.b. Express scientific information or findings numerically or symbolically.

SP.6.c. Express scientific information or findings verbally.

SP.7 Scientific Theories

SP.7.a. Understand and apply scientific models, theories and processes.

SP.7.b. Apply formulas from scientific theories.

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SP.8 Probability & Statistics

SP.8.a. Describe a data set statistically.

SP.8.b. Use counting and permutations to solve scientific problems.

SP.8.c. Determine the probability of events.

Practices 1-8 are drawn from the scientific practices in *A Framework for K-12 Science Education*.

STANDARDS AND CONTENT TOPICS

Listed below are the standards and content topics for the GED® Preparation Program. The content topics are designed to provide context for measuring the skills defined in the science practices listed in the preceding table. Each item on the science test will be aligned to one science practice and one content topic.

LIFE SCIENCE STANDARDS	
L.1	<p>Describe systems and functions of the human body systems and how to keep healthy.</p> <p>L.1.a. Body systems (e.g., muscular, endocrine, nervous systems) and how they work together to perform a function (e.g., muscular and skeletal work to move the body).</p> <p>L.1.b. Homeostasis feedback methods that maintain homeostasis (e.g., sweating to maintain internal temperature) and effects of changes in the external environment on living things (e.g., hypothermia, injury).</p> <p>L.1.c. Sources of nutrients (e.g., foods, symbiotic organisms) and concepts in nutrition (e.g., calories, vitamins, minerals).</p> <p>L.1.d. Transmission of disease and pathogens (e.g., airborne, blood borne), the effects of disease or pathogens on populations (e.g., demographics change, extinction), and disease prevention methods (e.g., vaccination, sanitation).</p>
L.2	<p>Explain the relationship between life functions and energy intake.</p> <p>L.2.a. Energy for life functions (e.g., photosynthesis, respiration, fermentation).</p>

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L.3	<p>Explain the flow of energy in ecological networks (ecosystems).</p> <p>L.3.a. Flow of energy in ecosystems (e.g., energy pyramids), conversation of energy in an ecosystem (e.g., energy lost as heat, energy passed on to other organisms) and sources of energy (e.g., sunlight, producers, lower level consumer).</p> <p>L.3.b. Flow of matter in ecosystems (e.g., food webs and chains, positions of organisms in the web or chain) and the effects of change in communities or environment on food webs.</p> <p>L.3.c. Carrying capacity, changes in carrying capacity based on changes in populations and environmental effects and limiting resources necessary for growth.</p> <p>L.3.d. Symbiosis (e.g., mutualism, parasitism, commensalism) and predator/prey relationships (e.g., changes in one population affecting another population).</p>
	<p>L.3.e. Disruption of ecosystems (e.g., invasive species, flooding, habitat destruction, and desertification) and extinction (e.g., causes [human and natural] and effects).</p>
L.4	<p>Explain organization of life by structure and function of life.</p> <p>L.4.a. Essential functions of life (e.g., chemical reactions, reproduction, and metabolism) and cellular components that assist the functions of life (e.g., cell membranes, enzymes, energy).</p> <p>L.4.b. Cell theory (e.g., cells come from cells, cells are the smallest unit of living things), specialized cells and tissues (e.g., muscles, nerve, etc.) and cellular levels of organization (e.g., cells, tissues, organs, systems). L.4.c. Mitosis, meiosis (e.g. process and purpose).</p>
L.5	<p>Describe the molecular basis for heredity.</p> <p>L.5.a. Relationship of DNA, genes, and chromosomes (e.g. description, chromosome splitting during meiosis) in heredity.</p> <p>L.5.b. Genotypes, phenotypes and the probability of traits in close relatives (e.g., Punnett squares, pedigree charts).</p> <p>L.5.c. New alleles, assortment of alleles (e.g., mutations, crossing over), environmental altering of traits, and expression of traits (e.g., epigenetics, color points of Siamese cats).</p>

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L.6	<p>Describe the scientific theories of evolution.</p> <p>L.6.a. Common ancestry (e.g., evidence) and cladograms (e.g., drawing, creating, interpreting).</p> <p>L.6.b. Selection (e.g., natural selection, artificial selection, evidence) and the requirements for selection (e.g., variation in traits, differential survivability). L.6.c. Adaptation, selection pressure, and speciation.</p>
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PHYSICAL SCIENCE STANDARDS

P.1	<p>Explain conservation, transformation, and flow of energy.</p> <p>P.1.a. Heat, temperature, the flow of heat results in work and the transfer of heat (e.g., conduction, convection).</p> <p>P.1.b. Endothermic and exothermic reactions.</p> <p>P.1.c. Types of energy (e.g., kinetic, chemical, mechanical) and transformations between types of energy (e.g., chemical energy [sugar] to kinetic energy [motion of a body]).</p>
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	<p>P.1.d. Sources of energy (e.g., sun, fossil fuels, nuclear) and the relationships between different sources (e.g., levels of pollutions, amount of energy produced).</p> <p>P.1.e. Types of waves, parts of waves (e.g. frequency, wavelength), types of electromagnetic radiation, transfer of energy by waves, and the uses and dangers of electromagnetic radiation (e.g. radio transmission, UV light and sunburns).</p>
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P.2	<p>Explain the relationship of work, motion, and forces.</p> <p>P.2.a. Speed, velocity, acceleration, momentum, and collisions (e.g., inertia in a car accident, momentum transfer between two objects).</p> <p>P.2.b. Force, Newton’s Laws, gravity, acceleration due to Gravity (e.g., freefall, law of gravitational attraction), mass and weight.</p> <p>P.2.c. Work, simple machines (types and functions), mechanical advantages (forces, distance, and simple machines), and power.</p>
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P.3	<p>Describe the chemical properties and reactions related to living systems.</p> <p>P.3.a. Structure of matter.</p> <p>P.3.b. Physical and chemical properties, changes of state, and density.</p> <p>P.3.c. Balancing chemical equations and different types of chemical equations, conservation of mass in balanced chemical equations and limiting reactants.</p> <p>P.3.c. Parts in solutions, general rules of solubility (e.g., hotter solvents allow more solute to dissolve), saturation and the differences between weak and strong solutions.</p>
EARTH AND SPACE SCIENCE STANDARDS	
ES.1	<p>Describe Interactions between earth’s systems and living things.</p> <p>ES.1.a. Interactions of matter between living and nonliving things (e.g., cycles of matter) and the location, uses and dangers of fossil fuels.</p> <p>ES.1.b. Natural Hazards (e.g., earthquakes, hurricanes, etc.) their effects (e.g., frequency, severity, and short- and long-term effects), and mitigation thereof (e.g., dikes, storm shelters, building practices).</p> <p>ES.1c. Extraction and use of natural resources, renewable vs. nonrenewable resources and sustainability.</p>
ES.2	<p>Describe Earth and its System Components and Interactions.</p> <p>ES.2.a. Characteristics of the atmosphere, including its layers, gases and their effects on the Earth and its organisms, include climate change.</p>
	<p>ES.2.b. Characteristics of the oceans (e.g., salt water, currents, coral reefs) and their effects on Earth and organisms.</p> <p>ES.2.c. Interactions between Earth’s systems (e.g., weathering caused by wind or water on rock, wind caused by high/low pressure and Earth rotation, etc.).</p> <p>ES.2.d. Interior structure of the Earth (e.g., core, mantle, crust, tectonic plates) and its effects (e.g., volcanoes, earth quakes, etc.) and major landforms of the Earth (e.g., mountains, ocean basins, continental shelves, etc.).</p>

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ES.3	<p>Describe the structures and organization of the Cosmos.</p> <p>ES.3.a. Structures in the universe (e.g., galaxies, stars, constellations, solar systems), the age and development of the universe, and the age and development of Stars (e.g., main sequence, stellar development, deaths of stars [black hole, white dwarf]).</p> <p>ES.3.b. Sun, planets, and moons (e.g., types of planets, comets, asteroids), the motion of the Earth’s motion and the interactions within the Earth’s solar system (e.g., tides, eclipses).</p> <p>ES.3.c. The age of the Earth, including radiometrics, fossils, and landforms.</p>
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Notes:

- Information on the GED® tests is based on the *Assessment Guide for Educators, GED® Testing Service*
- The GED® Science Content Topics are informed by the National Research Council’s *A Framework for K-12 Science Education: Practices, Crosscutting Concepts and Core Ideas, 2011.*