

K-12 Science Taxonomy
K-12 Science Content Areas

100	Nature of Science
200	Science & Technology
300	Science, Health & Environment
400	Measurement & Calculation in Science
500	Components of Living Systems
600	Biochemistry
700	Botany
800	Animal Biology
900	Human Biology
1000	Genetics
1100	Evolution
1200	Reproduction & Development
1300	Ecology
1400	Energy

2000	Earth Systems
2100	Astronomy
2200	Meteorology
2300	Elements & The Periodic System
2400	Chemical Formulas & Reactions
1500	Motion & Forces
1600	Electricity
1700	Waves
1800	Kinetics and Equilibrium
1900	Properties of Matter
2500	Acids, Bases, & Salts
2600	Organic Chemistry
2700	Nuclear Chemistry

Other Coding Conventions

Topics:

0	All
999	Out of Subject Area

Cognitive Demands:

B	Memorize Facts/Definitions/Formulas
C	Conduct Investigations/Perform Procedures
D	Communicate Understanding
E	Analyze Information
F	Apply Concepts/Make Connections
Z	Non-Specific Cognitive Demand

K-12 Science Taxonomy

100	Nature of Science
101	Nature and structure of science
102	Nature of scientific inquiry/method
103	Scientific habits of mind, logic, and reasoning
104	Issues of diversity, culture, and gender in science
105	History of scientific innovations
106	Ethical issues and critiques of science
190	Other
200	Science & Technology
201	Technological benefits, trade-offs, and consequences
202	Relationship between scientific inquiry and technological design
203	Science tools and lab safety
204	Design or implement a solution or product
290	Other
300	Science, Health & Environment
301	Personal health, behavior, disease, and nutrition
302	Environmental health, pollution, and waste disposal
303	Acid rain
304	Ozone depletion
305	Resources and conservation
306	Toxic and nuclear waste
307	Greenhouse effect
308	Natural and human-caused hazards
390	Other
400	Measurement & Calculation in Science
401	The International System
402	Mass and weight
403	Length
404	Volume
405	Time
406	Temperature
407	Accuracy and precision vs. estimation
408	Significant digits
409	Derived units (e.g., rate and speed)
410	Conversion factors
411	Density
412	Data displays (e.g., tables, charts, maps, and graphs)
490	Other
500	Components of Living Systems
501	Cell structure and function
502	Cell Theory
503	Transport of cellular material
504	Cell metabolism
505	Cell response
506	Cellular respiration
507	Cell specialization
508	Organs
509	Organ systems
510	Microbiology
590	Other

600	Biochemistry
601	Living elements (C, H, O, N, P)
602	Atomic structure and bonding
603	Synthesis reactions (proteins)
604	Hydrolysis
605	Organic Compounds (e.g., carbon, proteins, nucleic/amino Acids, and enzymes)
690	Other
700	Botany
701	Nutrition and photosynthesis
702	Circulation
703	Respiration
704	Growth/development/behavior
705	Health and disease
706	Structure and function
790	Other
800	Animal Biology
801	Nutrition
802	Circulation
803	Excretion
804	Respiration
805	Growth/development/behavior
806	Health and disease
807	Structure and function
808	Skeletal and muscular systems
809	Nervous and endocrine systems
810	Habitat
890	Other
900	Human Biology
901	Nutrition and digestive system
902	Circulatory system and blood
903	Excretory system
904	Respiration and respiratory system
905	Growth/development/behavior
906	Health and disease/immune system
907	Skeletal and muscular systems
908	Nervous and endocrine systems
990	Other
1000	Genetics
1001	Mendelian genetics
1002	Modern genetics
1003	Inherited diseases
1004	Biotechnology
1005	Human genetics
1006	Transcription and translation
1007	Mutation
1090	Other

K-12 Science Taxonomy

1100	Evolution
1101	Evidence for evolution
1102	Lamarckian theories
1103	Modern evolutionary theory
1104	Life origin theories
1105	Human evolution
1106	Classification
1107	Causes
1108	Natural selection
1190	Other
1200	Reproduction and Development
1201	Mitotic and meiotic cell division
1202	Asexual reproduction
1203	Inherited traits
1204	Reproduction and development in plants
1205	Reproduction and development in animals
1206	Reproduction and development in humans
1290	Other
1300	Ecology
1301	Food webs and chains
1302	Competition and cooperation
1303	Energy flow relationships
1304	Biotic and abiotic factors
1305	Ecological succession
1306	Ecosystems
1307	Population dynamics
1308	Environmental chemistry
1309	Adaptation and variation
1310	Niche populations
1390	Other
1400	Energy
1401	Potential energy
1402	Kinetic energy
1403	Conservation of mass and energy
1404	Heat energy and transfer
1405	Light energy
1406	Sound energy
1407	Laws of thermodynamics and entropy
1408	Work and energy
1409	Mechanical energy and machines
1410	Nuclear energy
1490	Other

1500	Motion & Forces
1501	Vector and scalar quantities
1502	Displacement as a vector quantity
1503	Velocity as a vector quantity
1504	Relative position and velocity
1505	Acceleration
1506	Newton's First Law
1507	Newton's Second Law
1508	Newton's Third Law
1509	Momentum, impulse, and conservation
1510	Equilibrium
1511	Friction
1512	Universal gravitation
1590	Other
1600	Electricity
1601	Static electricity (production, transfer, and distribution)
1602	Coulomb's Law
1603	Electric fields
1604	Current electricity
1605	Current, voltage, and resistance
1606	Series and parallel circuits
1607	Magnetism
1608	Effects of interacting fields
1609	Conductors and insulators
1690	Other
1700	Waves
1701	Characteristics and behavior
1702	Visible light (direction /speed/transformation)
1703	Non-visible light/electromagnetic spectrum (e.g. ultraviolet, infrared)
1704	Sound (e.g. direction, speed, transformation)
1705	Earthquakes, tsunamis, and ocean waves
1790	Other
1800	Kinetics and Equilibrium
1801	Molecular motion
1802	Pressure
1803	Kinetics and temperature
1804	Equilibrium
1805	Reaction rates
1890	Other

K-12 Science Taxonomy

1900	Properties of Matter
1901	Characteristics and composition
1902	Elements, molecules, and compounds
1903	States of matter (S-L-G-P)
1904	Solutions and mixtures
1905	Physical and chemical changes
1906	Physical and chemical properties
1907	Isotopes, atomic number, and atomic mass
1908	Photons and spectra
1909	Atomic theory
1910	Quantum theory and electron clouds
1990	Other
2000	Earth Systems
2001	Earth's shape, dimension, and composition
2002	Earth's origins and history
2003	Maps, locations, and scales
2004	Measuring using relative and absolute time
2005	Mineral and rock formations and types
2006	Erosion and weathering
2007	Plate tectonics
2008	Formation of: volcanoes, earthquakes, and mountains
2009	Topography
2010	Dynamics and energy transfer
2011	Oceanography
2090	Other
2100	Astronomy
2101	Stars
2102	Galaxies
2103	Origins of the universe
2104	Asteroids and comets
2105	The solar system
2106	The Moon
2107	The Earth's motion: rotation and revolution
2108	Relationship of Earth, moon, and sun
2109	Location, navigation, and time
2190	Other
2200	Meteorology
2201	The Earth's atmosphere
2202	Air pressure and winds
2203	Evaporation, condensation, and precipitation
2204	Weather
2205	Climate
2290	Other
2300	Elements and The Periodic System
2301	Early classification system(s)
2302	Modern periodic table
2303	Interaction of elements
2304	Element characteristics (families and periods)
2390	Other

2400	Chemical Formulas & Reactions
2401	Names, symbols, and formulas
2402	Molecular and empirical formulas
2403	Representing chemical change
2404	Balancing chemical equations
2405	Stoichiometric relationships
2406	Oxidation-reduction reactions
2407	Chemical bonds
2408	Electrochemistry
2409	The Mole
2410	Types of reactions
2490	Other
2500	Acids, Bases, and Salts
2501	Arrhenius/Bronsted-Lowry/Lewis Theories
2502	Naming acids
2503	Acid/Base behaviors and strengths
2504	Salts
2505	pH
2506	Hydrolysis
2507	Buffers
2508	Indicators
2509	Titration
2590	Other
2600	Organic Chemistry
2601	Hydrocarbons, alkenes, alkanes, and alkynes
2602	Aromatic hydrocarbons
2603	Isomers and polymers
2604	Aldehydes, ether, ketones, esters, alcohols, and organic acids
2605	Organic reactions
2606	Carbohydrates, proteins, and lipids
2690	Other
2700	Nuclear Chemistry
2701	Nuclear structure
2702	Nuclear equations
2703	Fission
2704	Radioactivity
2705	Half-life
2706	Fusion
2790	Other

Cognitive Demand Categories for Science

B	C	D	E	F
Memorize Facts Definitions, Formulas	Conduct Investigations / Perform Procedures	Communicate Understanding of Science Concepts	Analyze Information	Apply Concepts / Make Connections
<u>Recite basic science facts</u> <u>Recall science terms and definitions</u> <u>Recall scientific formulas</u>	<u>Make observations</u> <u>Collect and record data</u> <u>Use appropriate tools</u> <u>Make measurements, do computations</u> <u>Execute procedures</u> <u>Plan and design experiments</u> <u>Test effects of different variables</u>	<u>Explain concepts</u> <u>Observe and explain teacher demonstrations</u> <u>Explain procedures and methods of science and inquiry</u> <u>Organize and display data in tables and charts</u>	<u>Classify and compare data</u> <u>Analyze data, recognize patterns</u> <u>Generate questions, make predictions</u> <u>Infer from data</u> <u>Draw conclusions</u>	<u>Use and integrate science concepts</u> <u>Apply and adapt science information to real-world situations</u> <u>Build or revise theory</u> <u>Apply science ideas outside the context of scienc</u>