Regional Occupational Program

Water Works: Next Generation Careers in the Water Industry A-G 2026-2027

COURSE DESCRIPTION

Water Works: Next Generation Careers in the Water Industry is a UC A-G elective course that integrates Next Generation Science Standards with the CTE Model Curriculum Standards for the Environmental Resources Pathway. The water industry in California offers a multitude of technical careers that do not require additional education beyond industry certifications. These certifications offer students a career path that is important to the health and well-being of Californians, as well as relatively high starting salaries, benefits, and room for advancement. The course provides students with a basic understanding of the water industry and foundational skills and knowledge aligned to entry-level certification pathways. Certification examinations are administered by agencies including the State Water Resources Control Board and CA-NV AWWA. The course is divided into six units that introduce students to certification-aligned content in drinking water distribution, drinking water treatment, wastewater operations, and water-use efficiency.

Course Information:

Course Length:	1 Year
Prerequisite:	Pre-Algebra
Course Level:	Introductory
UC:	Yes G - Elective
Articulated:	No
Industry Cert.:	Yes - D1/T1, WW I, WUEP-aligned
Industry Sector:	Energy, Environment, and Utilities
Pathway:	Environmental Resources
CALPADS:	7610

O*Net SOC Codes:

11-9121.02	Water Resources Specialists
17-2051.02	Water/Wastewater Engineers
19-1031	Conservation Scientists

Legend:

CTE - PS	CTE Pathway Standards
CRP	Career Ready Practices
CTE - AS	CTE Anchor Standards
CCSS	Common Core State Standards
ISTE	International Society for Technology in Education

Water Works: Next Generation Careers in the Water Industry

Course Orientation

a. Discuss objectives for this course, including competencies, teacher expectations, classroom policies, and procedures.
b. Identify and discuss the acquisition of transferable skills (communication, collaboration, creativity, and critical thinking) and their importance to being college and career ready and for future personal and professional success.
c. Review objectives, competencies, and course syllabus.
d. Discuss student and teacher expectations, including behavior, class rules, appropriate dress, pre-course knowledge, and grading policies, including enrollment and attendance requirements and procedures, and classroom/school safety and disaster procedures.
e. Discuss next steps in course sequence related to the career pathway, the need for reinforcement of basic skills, transferrable skills, and postsecondary and career options.
f. Discuss the Big Six: Career Ready Essentials and the Standards for Career Ready Practice as they relate to this course, all aspects of the industry sector, and being college and career ready.

Big Six: Career Ready Essentials

1. Effective Communication	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate effective verbal communication and conflict resolution skills. **b. Use the writing process to develop written communication with the appropriate tone, organization, and format for the identified audience.** c. Explain the effect of interpersonal skills on one's ability to communicate effectively and develop relationships. d. Describe the impact of ineffective communication on business relationships. e. Analyze the impact of vocabulary, body language, and tone on verbal communication. f. Demonstrate active listening skills. g. Accurately interpret industry-specific written communication. h. Model responsible and effective use of various communication technologies. i. Identify valid and reliable digital reference and resource materials. j. Gather information from multiple digital sources to compare and contrast, synthesize, and summarize. k. Identify and use appropriate communication and collaboration technologies. l. Utilize technology to problem solve, accomplish tasks, and to produce or publish products.		1 2 11	2 3 4 5 7 8 9 10 11	**LS** 9-10 11-12.6 **SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.7 11-12.6	1b,c 2c 3b,c 5c 6b,c,d

2. Collaboration, Creativity, and Critical Thinking	CTE - PS	CRP	CTE - AS	CCSS	ISTE
a. Demonstrate critical thinking skills for a variety of purposes and in different settings. **b. Collaborate to reach consensus on an identical objective through the sharing of knowledge, tasks, and learning.**		2 4 5	2 3 4	**LS** 9-10 11- 12.6	1c 3c,d 4a-d

c. Discuss the importance of the critical thinking process to real-world applications. d. Evaluate the impact of creative thinking on problem solving and innovation in real-world applications. e. Compile work that demonstrates the process used to (elaborate, refine, analyze) evaluate original ideas and maximize creative efforts. f. Apply divergent and convergent thinking to the development of an original idea or solution. g. Examine real-world limits to adopting ideas. h. Demonstrate creative thinking (preparation, insight, evaluation, elaboration, and communication) to create a new idea or concept. i. Assume shared responsibility for collaborative work, and value the individual contributions made by each team member. j. Evaluate evidence, arguments, claims, and beliefs to identify connections. k. Identify bias, prejudice, propaganda, self-deception, distortion, and misinformation. l. Produce intellectual, informational, or material products that serve an authentic purpose. m. Work effectively and respectfully with those from diverse backgrounds or cultures. n. Demonstrate respect, trust, commitment, and the ability to compromise in collaborative projects.		7 9 10 11	5 7 8 9 11	**SLS** 9-10 11-12.1 11-12.1d 11-12.2 **WS** 11-12.7 11-12.6	5c,d 6c 7b,c,d
3. Leaders and Teams: Roles and Responsibilities	**CTE – PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Determine the individual and team members' roles and responsibilities. **b. Demonstrate leadership skills and qualities (i.e., reliability, negotiation skills, initiative, positive reinforcement, recognition of others' efforts, problem-solving skills, conflict resolution, and delegation).** c. Explain the importance of technical, social, and communication skills to team success. d. Compare and contrast leadership styles and their effectiveness in various situations. e. Organize and delegate responsibilities in a team setting to encourage ideas, perspectives, and contributions from all team members. f. Develop a strong sense of team identity by brainstorming solutions, volunteering, assisting others, practicing respect and courtesy, and taking initiative. g. Examine situations in which a follower becomes the leader. h. Describe twenty-first-century skills required across all occupations. i. Identify and discuss the characteristics of a successful team (i.e., leadership, cooperation, and effective decision-making). j. Leverage social and cultural differences to increase innovation and quality of work.		7 8 9	3 7 8 9 11	**SLS** 11-12.2 9-10 11-12.1 11-12.1d **WS** 11-12.6	7a,c
4. Legal, Ethical, and Environmental Considerations	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate industry specific ethical and legal practices. **b. Identify eco-friendly industry specific practices and resources.** c. Identify local, state, and federal regulatory agencies, entities, laws, and regulations.		5 7 8	3 5 7	**WS** 11-12.6 11-12.7	2a,b 3a,b 5c

d. Identify discrimination based on race, nationality, religion, gender, age, disability, or sexual orientation. e. Summarize the ethical and legal implications of workplace discrimination and harassment. f. Explain the concept of corporate citizenship. g. Examine an employer's role in protecting the health and welfare of employees, the community, and the environment. h. Analyze current environmental laws and regulations and their impact on industry. i. Compare and contrast both society's and industry's impact on the environment.		12	8 9 11	**SLS** 9-10 11-12.1 11-12.1d 11-12.2	6c
5. Personal Growth and Career Planning	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate continued personal development and growth. **b. Develop and manage a personal growth and career plan.** c. Explain the relationship between sound financial habits and financial security. d. Create and manage a personal financial plan. e. Demonstrate initiative in achieving personal and professional goals. f. Apply time management strategies to meet deadlines. g. Demonstrate a growth mindset through flexibility and a positive attitude. h. Select and demonstrate appropriate job-search and retention techniques. i. Demonstrate strategies to prepare for employment. j. Demonstrate interpersonal skills appropriate for the workplace. k. Elaborate on the importance of perseverance to personal and professional success. l. Discover personal career interests, aptitudes, and skills.		1 2 3 4 6	2 3 4 7 8 11	**LS** 9-10 11-12.6 **SLS** 9-10 11-12.1 11-12.1d 11-12.2 **WS** 11-12.6	1a 3a,c 4d 6a,d 7b
6. Workplace Safety and Personal Wellness	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate proper industry specific safe work practices to prevent injury or illness. **b. Assess the potential impact of goal setting on personal and professional success.** c. Describe the role of security and emergency procedures in workplace safety. d. Describe the effect of preventative measures on emergencies in the workplace. e. Identify and describe the causes, prevention, and treatment of common accidents. f. Identify local, state, and federal agencies that regulate workplace safety. g. Explain the role of the California Occupational Safety and Health Administration (Cal-OSHA) and the Environmental Protection Agency (EPA). h. Discuss the basics of system operations. i. Demonstrate the proper use of personal protective equipment (PPE). j. Explain the purpose of and accurately interpret a Safety Data Sheet (SDS). k. Identify hazardous materials and chemicals. l. Demonstrate proper procedures to respond to work-related accidents and injuries. m. Describe how ergonomics, housekeeping, and maintenance are related to accidents and injuries.		2 5 6 8 12	2 5 6 7 8 10 11	**LS** 9-10 11-12.6 **WS** 11-12.7 11-12.6 **SLS** 9-10 11-12.1 11-12.1d	1a,d 2a,d 5b

n. Demonstrate cyber ethics, cyber safety, and cybersecurity. o. Assess the potential impact of preventative physical and mental health measures on workplace safety.					
Get in the Water: Careers with a Future Units of Instruction					
7. Water Career Exploration	**CTE-PS**	**CRP**	**CTE- AS**	**CCSS**	**ISTE**
a. Demonstrate knowledge of the professional standards and expected behaviors customary throughout the water industry. **b. Demonstrate understanding about key careers within the water industry.** c. Explain the role of certification, training, and regulatory compliance in the operation, maintenance, and management of water systems that support safe drinking water and wastewater treatment. d. Explain career pathways in water distribution, water treatment, wastewater operations, and water-use efficiency, including education, certification, and advancement opportunities. e. Discuss labor market data, projected job growth, required education and/or certifications, and the roles and responsibilities of key occupations within the water industry. f. Identify colleges, training programs, apprenticeships, and employers that provide education, training, and career opportunities within the water industry.	A1.4	1 2 3 11	1 2 3 11	**LS** 9-10 11-12.6 **SLS** 11-12.2	
8. Introduction to the World of Water	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate understanding of the complexities of water supply or available water provided to fill a particular need such as domestic, industrial, agricultural, and recreational needs. **b. Demonstrate basic knowledge about the role water treatment, water distribution, wastewater, and water-use efficiency play in today's society.** c. Describe local, regional, and state geography and explain how geography, topography, and geology impact the supply, distribution, and transportation of water. d. Explain the hydrologic cycle (condensation, precipitation, evaporation, and transpiration) and its impact on water supply. e. Discuss how climate change, caused by excessive greenhouse gas emissions is disrupting water quantity and water quality. f. Explain how water quality and water supply reliability are jeopardized by climate change. g. Describe how increasing pressure of population growth, climate change, pollution, and change in land use affect water quantity and quality. h. Discuss the current and future availability of water needed to meet the needs of agriculture, industry, commerce, and recreation.	A2.1 A2.3 A3.2 A3.3 A10.2	1 2 4 5 11 12	1 2 4 5 11	**NGSS** ESS2 ESS3 SEP 4 SEP7 **LS** 9-10 11-12.6 **WS** 11-12.7	

9. Water-Use Efficiency-Let's Make It Last	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate understanding of the role water conservation and water-use efficiency play in water utility operations and long-term resource management. b. **Demonstrate knowledge of the impacts population growth and population density have on water supply and water demand.** c. Explain the hierarchy of water rights in California and how it affects water use, stewardship, allocation, and management. d. Discuss the effects of residential water-use on California's water supply. e. Discuss competition for water resources and water allocation from the perspective of different stakeholders. f. Explain the inherent differences between supply and source. g. Explain Gallons Per Capita Per Day (GPCD) and its role in water conservation and urban water management.	A3.1 A3.2 A3.5 A6.1 A9.1 A9.4 A10.2 A12.1 A12.3	1 2 5 7 9 11 12	1 2 5 7 9 11	**NGSS** ESS2 ESS3 SEP7 **LS** 9-10 11-12.6 **WS** 11-12.7 **SLS** 9-10 11-12.1 11-12.1b	
10. Distribution and Treatment – A Safe and Reliable Supply	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**
a. Demonstrate basic knowledge of water distribution systems for delivering water to consumers with the appropriate water quality, quantity, and pressure to meet user needs. b. **Demonstrate basic knowledge of the role of water treatment systems in protecting public health and safety.** c. Discuss the public health risks associated with drinking untreated or inadequately treated water. d. Compare and contrast surface water and groundwater sources and the treatment approaches used for each. e. Describe the relationship among distribution networks, methods of water distribution, and storage capacity. f. Identify the different components of a distribution system and how these components work together to deliver water from its source to its point of use. g. Explain how a well works and why groundwater is often used as a primary water supply. h. Discuss emerging drinking water contaminants, including PFAS, and the role of treatment and regulation in protecting public health.	A9.1 A9.2 A9.4 A10.1 A12.1 A12.2	1 2 5 6 8 11	1 2 5 6 8 10 11	**NGSS** ESS2 ESS3 SEP7 PS4 **LS** 9-10 11-12.6 **WS** 11-12.7 **RSTS** 9-10 11-12.4 **SLS** 11-12.1d	
11. Wastewater – Where does Dirty Water Go?	**CTE - PS**	**CRP**	**CTE - AS**	**CCSS**	**ISTE**

a. **Demonstrate understanding of wastewater collection systems.** b. **Demonstrate understanding of wastewater treatment processes.** c. Explain why wastewater collection systems are critical to protecting public health. d. Discuss the impacts of improper wastewater treatment and disposal on the environment and public health. e. Identify the benefits of treated wastewater and water reuse for environmental protection and sustainability. f. Demonstrate understanding of the basic components and functions of a wastewater treatment plant.	A5.1 A5.2 A5.3 A12.1 A12.3 A12.4	1 2 4 5 8 11 12	1 2 4 5 8 10 11	**NGSS** PS2 SEP7 ESS2 ESS3 ETS1 **LS** 9-10 11-12.6 **WS** 11-12.6 11-12.7 **SLS** 11-12.1d	

A-G Approved Key Assignments	
1.	Research one of four careers: Water-Use Efficiency Practitioner, Distribution, Treatment, or Wastewater. The research will be gathered from both the internet and an informational or career presentation provided by a local utility. Information collected must include salary ranges, job qualifications, necessary experience, working conditions, the typical day, time in grade, required/desired certifications, and a description of how the certifications can be earned. To develop a global perspective students will also research careers in water that are available in other countries. Each student will create a 5-minute multimedia presentation that demonstrates a thorough understanding of the career opportunities available within the industry. *Unit(s) 7*
2.	Explore the United States Geological Survey (USGS) website and Environmental Protection Agency (EPA) website to learn how where they live impacts the water cycle. Students will prepare a lab report with their findings including visual representation (model) of the water cycle in their geographical area. *Unit(s) 8*
3.	Calculate individual water use by answering questions in an online water footprint calculator (https://www.watercalculator.org/). The calculator includes food choices, home energy use, and other water using practices. Scores are automatically calculated. Students will log their individual results for these four categories results for: home, diet, energy, and stuff. Students will then work in groups to plot the scores in a spreadsheet and create a graph. The teacher will post them anonymously and lead a class discussion about the findings and possible ways to reduce their water footprint. *Unit(s) 8*
4.	Investigate one river in California as it pertains to water supply and sustainability. Students will record in their logbook all of the information pertaining to their river and prepare a lab report documenting the water purveyors who use the river as a water source as well as the environmental impact of less water in the river. Using their research, students will create and present a five-minute multimedia presentation on the similarities and differences in various surface water supplies. *Unit(s) 9*
5.	Research aquifers and record findings. Using their research students will work in small groups to build a model of an aquifer. *Unit(s) 9*
6.	Investigate and analyze the state of groundwater basins in the Central Valley using resources found on the Department of Water Resources (https://water.ca.gov/Programs/Groundwater-Management) webpage to determine problems facing their local groundwater source. The findings will be documented in a lab report. *Unit(s) 9*
7.	Research the Gallons Per Capita Per Day (GPCD) of their local water purveyor and use the formula to correctly calculate the GPCD for a variety of regions in California. *Unit(s) 9*
8.	Students will work in groups to research different types of water rights which include Pueblo, Riparian, Appropriative, Overlying, and Prescriptive. Student groups will be assigned to one of the key stakeholder groups and using their research will prepare and present an argument as to why they should be given the rights to the water. *Unit(s) 9*
9.	Locate the Urban Water Management Plan (UWMP) on their water purveyors' website. Using this document students will determine if their local water is sourced from surface water. Students will further research additional documentation for surface water sources: The Watershed Sanitary Survey and Source Water Assessment. All research will be recorded in their logbook. *Unit(s) 10*
10.	Research the conventional treatment plant and the processes used to treat the water. Using this research students will build a model of their own water treatment plant to demonstrate understanding of the water treatment process. *Unit(s) 10*
11.	Students will work in small groups to prepare a 5-minute multimedia presentation on one of these topics: pretreatment, flash mixing, coagulation/flocculation, sedimentation, filtration, and disinfection, using a multimedia presentation platform. *Unit(s) 10*

12.	Research and document the different components (miles of pipe, number of reservoirs, number of connections and other pertinent information) of their local water system in a lab report. *Unit(s) 10*
13.	Research the wastewater treatment process and plant to build their own model of a wastewater treatment plant. *Unit(s) 11*
14.	Complete two different practice examinations for industry certifications. Students will then participate in a mock three-person panel interview for a position in one of the areas in which a practice examination was completed. *Unit(s) 12*

Standards Alignment

The curricula have been aligned with the CTE Model Curriculum Standards released in 2013. Each industry sector was updated to meet the increased rigor and relevancy requirements of the Common Core State Standards. The curriculum also includes the new Standards for Career Ready Practices.

Standards for Career Ready Practice

1. *Apply appropriate technical skills and academic knowledge.*
2. *Communicate clearly, effectively, and with reason.*
3. *Develop an education and career plan aligned with personal goals.*
4. *Apply technology to enhance productivity.*
5. *Utilize critical thinking to make sense of problems and persevere in solving them.*
6. *Practice personal health and understand financial literacy.*
7. *Act as a responsible citizen in the workplace and the community.*
8. *Model integrity, ethical leadership, and effective management.*
9. *Work productively in teams while integrating cultural and global competence.*
10. *Demonstrate creativity and innovation.*
11. *Employ valid and reliable research strategies.*
12. *Understand the environmental, social, and economic impacts of decisions.*

CTE Anchor Standards—Common Core English Language Arts Alignment

Anchor Standard 1: Academics

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the industry sector alignment matrix for identification of standards. Note: alignment listed within each sector.

Anchor Standard 2: Communications

Language Standard: Acquire and accurately use general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the (career and college) readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. LS 9-10, 11-12.6

Anchor Standard 3: Career Planning and Management

Speaking and Listening Standard: Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data. SLS 11-12.2

Anchor Standard 4: Technology

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments and information.

Anchor Standard 5: Problem Solving and Critical Thinking

Writing Standard: Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow, or broaden the inquiry when appropriate, and synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. WS 11-12.7

Anchor Standard 6: Health and Safety

Reading Standards for Science and Technical Subjects: Determine the meaning of symbols, keywords, and other domain-specific words and phrases as they are used in a specific scientific or technical context. RSTS 9-10, 11-12.4

Anchor Standard 7: Responsibility and Flexibility

Speaking and Listening Standard: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly and persuasively. SLS 9-10, 11-12.1

Anchor Standard 8: Ethics and Legal Responsibilities

Speaking and Listening Standard: Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the work. SLS 11-2.1d

Anchor Standard 9: Leadership and Teamwork

Speaking and Listening Standard: Work with peers to promote civil, democratic discussions and decision making; set clear goals and deadlines; and establish individual roles as needed. SLS 11-12.1b

Anchor Standard 10: Technical Knowledge and Skills

Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. WS 11-12.6

Anchor Standard 11: Demonstration and Application

Demonstrate and apply the knowledge and skills contained in the industry-sector anchor standards, pathway standards, and performance indicators in the classroom, laboratory, and workplace settings, and the career technical student organization. Note: no alignment evident for this standard. WS 11-12.6

Energy, Environment, and Utilities

A. Environmental Resources Pathway

A1.4 *List jobs in the community that result from, or are influenced by, processing and using energy resources.*

A2.1 *Describe the natural elements that interact to create climate.*

A2.3 *Analyze the impact of climate upon human activities and needs.*

A3.1 *Describe the sources of, and impacts attributable to, pollution and contamination.*

A3.2 *Recognize the actions that cause resource depletion.*

A3.3 *Define the causes of erosion and soil depletion.*

A3.5 *Identify the sources of, and impacts attributable to, habitat alteration.*

A5.1 *Understand the role of waste and storm water management systems, their operation, and their impact on the environment.*

A5.2 *Explore the causes and effects of pollution linked to wastewater treatment facilities.*

A5.3 *Identify wastewater treatment processes that lessen environmental impacts and improve water reuse.*

A6.1 *Describe the need for, and role of, habitat preservation.*

A9.1 *Understand water reuse: issues, strategies, technologies, and applications.*

A9.2 *Analyze strategies for improving energy efficiencies in water collection and distribution.*

A9.4 *Understand the functions and operations of water storage, reservoirs, aqueducts, and dams.*

A10.1 *Understand the designs and tools used in water flow management.*

A10.2 *Describe watershed modeling.*

A12.1 *Identify and discuss major environmental laws and policies, including the regulatory and legislative processes used to create such laws.*

A12.2 *Understand current regulations concerning recycling, solid waste, land use management, water quality, and renewable and nonrenewable energy.*

A12.3 *Compare and contrast environmental laws and regulations that may have a positive or negative impact on the environment and the economy.*

A12.4 *Create an environmental law or regulation and explain how it will impact the environment.*

ISTE Standards for Students

1. Empowered Learner- Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

a) Students articulate and set personal learning goals, develop strategies leveraging technology to achieve them, and reflect on the learning process itself to improve learning outcomes.

b) Students build networks and customize their learning environments in ways that support the learning process.

c) Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways

d) Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.

2. Digital Citizen- Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world, and they act and model in ways that are safe, legal, and ethical.

a) Students cultivate and manage their digital identity and reputation and are aware of the permanence of their actions in the digital world.

b) Students engage in positive, safe, legal, and ethical behavior when using technology, including social interactions online or when using networked devices.

c) Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

d) Students manage their personal data to maintain digital privacy and security and are aware of data-collection technology used to track their navigation online.

3.Knowledge Constructor- Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.

a) Students plan and employ effective research strategies to locate information and other resources for their intellectual or creative pursuits.

b) Students evaluate the accuracy, perspective, credibility, and relevance of information, media, data, or other resources.

c) Students curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions.

d) Students build knowledge by actively exploring real-world issues and problems, developing ideas and theories, and pursuing answers and solutions.

4. Innovative Designer- Students use a variety of technologies within a design process to identify and solve problems creating new, useful, or imaginative solutions.

a) Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems.

b) Students select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.

c) Students develop, test, and refine prototypes as part of a cyclical design process.

d) Students exhibit a tolerance for ambiguity, perseverance, and the capacity to work with open-ended problems.

5. Computational Thinker- Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

a) Students formulate problem definitions suited for technology-assisted methods such as data analysis, abstract models, and algorithmic thinking in exploring and finding solutions.

b) Students collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making.

c) Students break problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving.

d) Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.

6. Creative Communicator- Students communicate clearly and express themselves creatively for a variety of purposes using platforms, tools, styles, formats, and digital media appropriate for their goals.

a) Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

b) Students create original works or responsibly repurpose or remix digital resources into new creations.

c) Students communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models, or simulations.

d) Students publish or present content that customizes the message and medium for their intended audiences.

7. Global Collaborator- Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

a) Students use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning.

b) Students use collaborative technologies to work with others, including peers, experts, or community members, to examine issues and problems from multiple viewpoints.

c) Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

d) Students explore local and global issues and use collaborative technologies to work with others to investigate solutions.