Specialized Topics in Science

Adopted 2021

The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to explain phenomena or design solutions using appropriate tools and models. The student is expected to: ST.1

- **A.** ask questions and define problems related to specialized topics of study based on observations or information from text, phenomena, models, or investigations; ST.1.A
- **B.** apply science practices related to specialized topics of study to plan and conduct investigations or use engineering practices to design solutions to problems; ST.1.B
- **C.** use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards; ST.1.C
- **D.** use tools appropriate to the specialized topic of study; ST.1.D
- **E.** collect quantitative data using the International System of Units (SI) or qualitative data as evidence as appropriate to the specialized topic of study; ST.1.E
- **F.** organize quantitative or qualitative data using representations appropriate to the specialized topic of study such as scatter plots, line graphs, bar graphs, charts, data tables, diagrams, scientific drawings, and student-prepared models; ST.1.F
- **G.** develop and use models to represent phenomena, systems, processes, or solutions to problems as appropriate to the specialized topic of study; and ST.1.G
- **H.** distinguish among scientific hypotheses, theories, and laws as appropriate to the specialized topic of study. ST.1.H

The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate de
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- **A.** identify advantages and limitations of models such as their size, scale, properties, and materials as appropriate to the specialized topic of study; ST.2.A
- **B.** analyze data appropriate to the specialized topic of study by identifying significant statistical features, patterns, sources of error, and limitations; ST.2.B
- **C.** use mathematical calculations to assess quantitative relationships in data as appropriate to the specialized topic of study; and ST.2.C

evaluate experimental or engineering designs as appropriate to the specialized topic of study. ST.2.D

The student develops evidence-based explanations and communicates findings, conclusions, or proposed solutions. The student is expected to: ST.3	**A.** develop explanations or propose solutions supported by data and models consistent with scientific ideas, principles, and theories as appropriate to the specialized topic of study; ST.3.A
	B. communicate explanations or solutions individually and collaboratively in a variety of settings and formats as appropriate to the specialized topic of study; and ST.3.B
	C. engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence as appropriate to the specialized topic of study. ST.3.C
The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to: ST.4	**A.** analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental or observational testing as appropriate to the specialized topic of study, so as to encourage critical thinking by the student; ST.4.A
	B. relate the impact of past and current research on scientific thought and society, including research methodology, cost-benefit analysis, and contributions of diverse scientists as appropriate to the specialized topic of study; and ST.4.B
	C. research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field in order to investigate STEM careers as appropriate to the specialized topic of study. ST.4.C