

SHINE/SPIRIT Science Standards Search Tags

SA: Science as Inquiry

SB: Physical Science

SC: Life Science

SD: Earth and Space

SE: Science and Technology

SF: Science Perspectives

SG: Nature of Science

SCIENCE CONTENT STANDARDS (NRC)http://books.nap.edu/openbook.php?record_id=4962&page=103**SA Science as Inquiry**

SA1 Abilities necessary to do scientific inquiry

SA2 Understanding about scientific inquiry

SB Physical Science

SB1 Properties and changes of properties in matter

SB1 Motions and forces

SB3 Transfer of energy

SC Life Science

SC1 Structure and function in living systems

SC2 Reproduction and heredity

SC3 Regulation and behavior

SC4 Populations and ecosystems

SC5 Diversity and adaptations of organisms

SD Earth and Space Science

SD1 Structure of the earth system

SD2 Earth's history

SD3 Earth in the solar system

SE Science and Technology

SE1 Abilities of technological design

SE2 Understanding about science and technology

SF Science in Personal and Social Perspectives

SF1 Personal health

SF2 Populations, resources, and environments

SF3 Natural hazards

SF4 Risks and benefits

SF5 Science and technology in society

SG History and Nature of Science

SG1 Science as a human endeavor

SG2 Nature of science

SG3 History of science

SHINE/SPIRIT Technology Standards Search Tags

TA: Creativity, Innovation
TB: Collaboration
TC: Information Fluency
TD: Critical Thinking
TE: Digital Citizenship
TF: Technology Operations

TECHNOLOGY STANDARDS (ISTE NETS for Students 2007)

<http://www.iste.org/AM/Template.cfm?Section=NETS>

TA Creativity and Innovation

TA1 Apply existing knowledge to generate new ideas, products, or processes
TA2 Create original works as a means of personal or group expression
TA3 Use models and simulations to explore complex systems and issues
TA4 Identify trends and forecast possibilities

TB Communication and Collaboration

TB1 Collaborate with peers, experts, or others employing a variety of digital environments
TB2 Communicate ideas effectively to multiple audiences using a variety media
TB3 Develop cultural understanding and global awareness by engaging with other cultures
TB4 Contribute to project teams to produce original works or solve problems

TC Research and Information Fluency

TC1 Plan strategies to guide inquiry
TC2 Locate, organize, analyze, evaluate, synthesize, and ethically use information
TC3 Evaluate and select information sources and digital tools based on appropriateness
TC4 Process data and report results

TD Critical Thinking, Problem Solving, and Decision Making

TD1 Identify and define authentic problems and significant questions for investigation
TD2 Plan and manage activities to develop a solution or complete a project
TD3 Collect and analyze data to identify solutions and/or make informed decisions
TD4 Use multiple processes and diverse perspectives to explore alternative solutions

TE Digital Citizenship

TE1 Advocate and practice safe, legal, and responsible use of information and technology
TE2 Exhibit a positive attitude toward using technology
TE3 Demonstrate personal responsibility for lifelong learning
TE4 Exhibit leadership for digital citizenship

TF Technology Operations and Concepts

TF1 Understand and use technology systems
TF2 Select and use applications effectively and productively
TF3 Troubleshoot systems and applications
TF4 Transfer current knowledge to learning of new technologies

SHINE/SPIRIT Engineering Standards Search Tags

EA: Engineering Design

EB: Engineering Connections

EC: Nature of Engineering

ED: Communication

EE: Engineering and Society

NATIONAL K-12 ENGINEERING/TECHNOLOGY STANDARDS (ASEE, Draft 2007)<http://www.technologyiselementary.com/userfiles/file/ASEE%20Eng%20Standards%20Checklist.pdf>**EA Engineering Design**

- EA1 How to design and conduct experiments, as well as to analyze and interpret data
- EA2 Designing, testing, and building to meet desired needs within realistic constraints.
- EA3 Identifying and formulating engineering problems as they relate to engineering design
- EA4 Suggesting and evaluating alternative solutions, and applying iteration
- EA5 Optimizing a solution as it relates to engineering design, outcomes and perspectives
- EA6 Problem solving and that not all problems can be solved with engineering design

EB Connecting Engineering to Science, Technology, and Mathematics

- EB1 Understand essential concepts of science technology, and mathematics
- EB2 Understand properties of materials and how conditions affect those properties
- EB3 Understand complex systems and their constituent parts and the use in daily life
- EB4 Understand technological concepts used to communicate and test design ideas
- EB5 Understanding of how knowledge acquired in one context is applied in another context
- EB6 System thinking involves looking for how every part relates to others

EC Nature of Engineering

- EC1 Engineering uses scientific and technological knowledge to solve practical problems.
- EC2 Engineering disciplines have a common core of knowledge and areas of specializations
- EC3 Engineering permeates society and has intended and unintended consequences
- EC4 Engineering solutions have improved the quality of life and the global economy
- EC5 Lifelong learning builds on prior knowledge to make improvements to human existence
- EC6 Humankind has the inherent need to engineer

ED Communication and Teamwork

- ED1 Complex problems are better solved by teams rather than by individuals
- ED2 Effective individual and group communication skills are learned attributes.
- ED3 Roles of team members are an important aspect in learning to work collaboratively
- ED4 Engineers use universal standardized symbolic languages to communicate
- ED5 Engineered outcomes must be documented to accepted standards with precision
- ED6 Multidisciplinary and cross-functional teams bring a variety of skills and perspectives

EE Engineering and Society

- EE1 Engineering is a human endeavor that has always been practiced
- EE2 Engineered products and systems impact society in both expected and unexpected ways
- EE3 Professional ethics and societal responsibilities impact engineered solutions
- EE4 Engineering is neither positive nor negative, except through use of engineered products
- EE5 Development and use of engineered products and systems affect the way people live
- EE6 Public perception of engineering and of engineers varies greatly

SHINE/SPIRIT Mathematics Standards Search Tags

MA: Numbers, Operations

MB: Functions, Algebra

MC: Geometry, Spatial Sense

MD: Measurement

ME: Data, Statistics, Probability

MATHEMATICS CONTENT STANDARDS (NCTM)

<http://standards.nctm.org/document/chapter6/index.htm>

MA Number and Operations

MA1 Understand numbers, ways of representing numbers, relationships and number systems

MA2 Understand the meaning of operations and how they relate to each other

MA3 Use computational tools and strategies fluently and estimate appropriately

MB Patterns, Functions, and Algebra

MB1 Understand various types of patterns and functional relationships

MB2 Use symbolic forms to represent and analyze mathematical situations and structures

MB3 Use mathematical models and analyze change in both real and abstract contexts

MC Geometry and Spatial Sense

MC1 Analyze characteristics and properties of two- and three-dimensional geometric objects

MC2 Select and use representational systems, including coordinate geometry and graph theory

MC3 Recognize the usefulness of transformations and symmetry in analyzing mathematical situations

MC4 Use visualization and spatial reasoning to solve problems both within and outside of mathematics

MD Measurement

MD1 Understand attributes, units, and systems of measurement

MD2 Apply a variety of techniques, tools, and formulas for determining measurements

ME Data Analysis, Statistics, and Probability

ME1 Pose questions and collect, organize, and represent data to answer those questions

ME2 Interpret data using methods of exploratory data analysis

ME3 Develop and evaluate inferences, predictions, and arguments that are based on data

ME4 Understand and apply basic notions of chance and probability