

ENGINEERING HABITS OF MIND

Framework for P-12
Engineering Learning

Collaboration

the ability to work with others to complete a task and achieve desired goals.

Conscientiousness

the ability to focus on performing one's duties well and with the awareness of the impact that their own behavior has on everything around them.

Persistence

the ability to follow through with a course of action despite the challenges and oppositions one may encounter.

Creativity

the ability to think in a way that is different from the norm to develop original ideas.

Optimism

the ability to look at the more favorable side of an event or to expect the best outcomes in various situations.

Systems Thinking

the ability to recognize that all technological solutions are systems of interacting elements that are also embedded within larger man-made and/or natural systems.

ENGINEERING PRACTICES

Framework for P-12
Engineering Learning

Material Processing



Manufacturing
Measurement
Fabrication
Material Classification
Casting and Molding
Separating / Machining
Joining
Conditioning
Safety

Engineering Design




Problem Framing
Project Management
Information Gathering
Ideation
Prototyping
Decision-Making
Design Methods
Engineering Graphics
Design Communication

Quantitative Analysis

Computational Thinking
Computational Tools
Data Collection, Analysis, & Communication
System Analytics
Modeling & Simulation



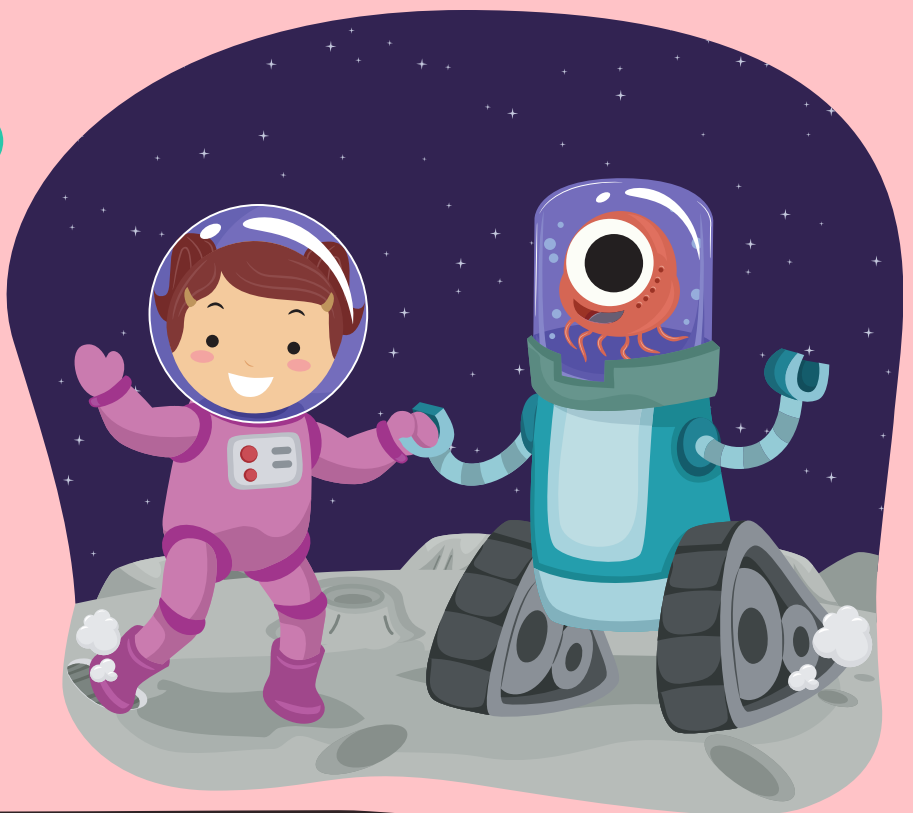
Professionalism



Professional Ethics
Workplace Behavior
Honoring Intellectual Property
Technological Impacts
Role of Society in Technological Developments
Engineering-Related Careers

HABITS OF MIND

Collaboration



Systems of thinking



Optimism

Persistence



Creativity

ENGINEERING HABITS OF MIND

OPTIMISM

the ability to look at the more favorable side of an event or to expect the best outcomes in various situations.



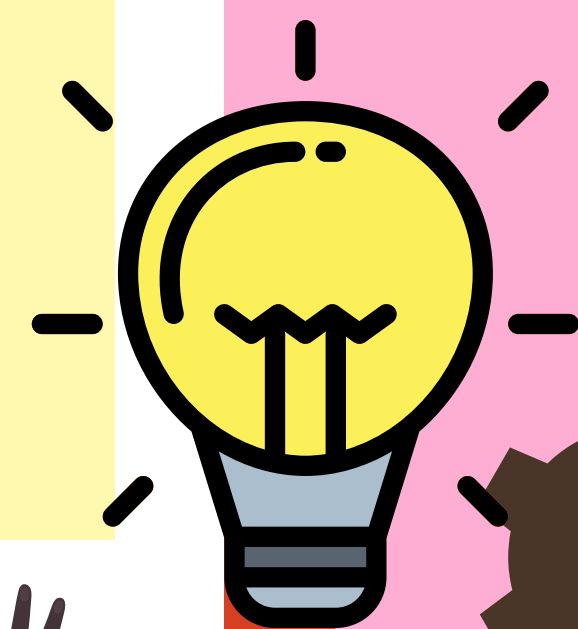
SYSTEMS THINKING

the ability to recognize that all technological solutions are systems of interacting elements that are also embedded within larger man-made and/or natural systems and that each component of these systems are connected and impact each other.



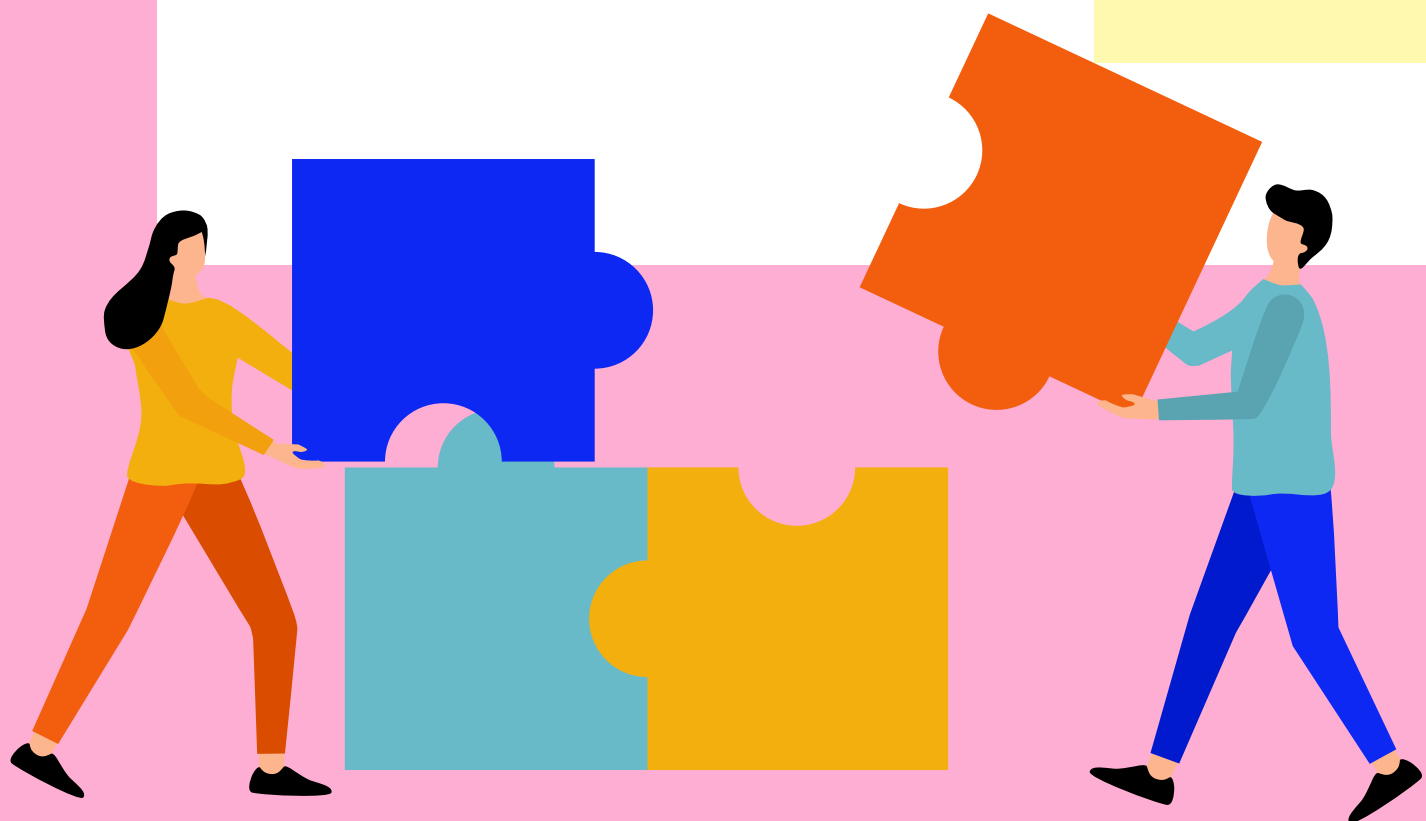
COLLABORATION

the ability to work with others to complete a task and achieve desired goals.



CREATIVITY

the ability to think in a way that is different from the norm to develop original ideas.



CONSCIENTIOUSNESS

the ability to focus on performing one's duties well and with the awareness of the impact that their own behavior has on everything around them

PERSISTENCE

the ability to follow through with a course of action despite of the challenges and oppositions one may encounter

