Middle School Learning Domains

Mindset: Ethics, analytical thinking, creativity, persistence, iteration, and the positive role of failure are important mindsets and habits of action. They are developed over time in problem solving processes, inquiry, and computational thinking.

Problem Solving Process and/or Design Process: Many disciplines, including engineering, computer science, and biomedical science, use an iterative problem solving process or engineering design process.

Computational Thinking: is used to solve problems or create solutions based on an identified need or an opportunity. Common concepts of computational thinking include: the use of algorithms, abstraction, problem decomposition, and data analysis and processing. Computational thinking can support solving problems across many disciplines including math, science, humanities, engineering, and computer science.

Modeling: Designing and creating models are essential to the engineering design and problem solving processes. Models are used to represent an artifact or a system to better understand its attributes and/or behavior. Models can be physical, mathematical, computer-generated, and/or simulated.

Measurement, Conversions, and Estimation: A common measurement system is essential to design accuracy for sketches, models, and prototypes. Measuring and dimensioning objects using appropriate tools and converting between two measurement systems are critical to effectively communicate and collaborate on design solutions.



Spatial Visualization: Sketching allows designers to quickly communicate ideas with accurate dimensions and details. Using technology, two-dimensional sketches can be represented in a three-dimensional solid model. Solid models allow designers to view multiple aspects and perspectives of a design.

Tools and Technology: There are a variety of tools and technology used during the different stages of an engineering design or problem-solving process. They include, but are not limited to, measuring tools, drawing tools, software applications including computer-aided design (CAD), computer algebra system (CAS) applications, modeling and simulation, data representation, and online resources.

Collaboration: Effective problem solving, experimentation, and/or design are most often conducted within teams.

Communication: can often be categorized as technical communication or professional communication.

Project Management: The discipline of carefully projecting or planning, organizing, motivating and controlling resources to achieve specific goals and meet specific success criteria.

Career Awareness: It is important to prepare a flexible education plan that matches your interests, knowing that you can change or modify that plan as you discover more about career opportunities.

At Austin Jewish Academy, we value a delight in learning, participating in our local community and the world and learning together.

Throughout this process students will build their capabilities as confident, connected learners through their active involvement in these rich authentic tasks.