

## **Course Name: Engineering Technology**

**Course #: H7742    Grades: 9 – 12    Level: 0    Sem: 5X    Credits: 2.5**

### **Course Description:**

This hands-on course explores design systems in problem solving with robotic and electronic challenges as the main vehicles for the design process. Students work in teams to use the engineering design process to solve problems. Students will have various design challenges that increase in complexity throughout the semester that focus on the iterative design process. The concepts demonstrated and used in this course will help students develop work related skills and to become productive and technologically literate citizens.

### **Course Proficiencies:**

The following is a list of skills and concepts students will be proficient in upon successful completion of this course. These proficiencies form the basis of assessment of each student's achievement. Students who demonstrate understanding can:

1. Work collaboratively to support individual learning and contribute to the learning of others while developing an innovative solution to a real-world problem within a specific timetable. *(8.1.12.C.1, CRP 1-12)*
2. Demonstrate personal responsibility for lifelong learning by developing a technological vocabulary and display a working knowledge of technological terms. *(9.2.12.C.3, CRP 1-12)*
3. Identify some positive and negative impacts of technology on society, the individual, and the environment. *(8.2.12.B.1-5, 8.2.12.D.6)*
4. Develop a systematic plan of investigation to solve a real-world problem by synthesizing information from multiple sources and selecting appropriate digital tools to communicate findings. *(8.1.12.E.1, SL. 11-12.4, SL.11-12.5, CRP 4,7)*
5. Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and/or social needs. *(8.1.12.F.1)*
6. Use the design process to devise a technological product or system that addresses a problem, provide research, identify trade-offs and constraints, and document the process through drawings including data and materials. *(8.2.12.C.5, 8.2.12.C.7)*
7. Identify and explain various principles and components of robotic construction and programming. *(8.2.12.C.1, 8.2.12.E.1-4)*
8. Test and evaluate interdependent robot systems for optimal functionality as a whole robotic system. *(8.2.12.C.4)*
9. Learn the importance of the rudimentary principles of mechanical advantage as illustrated through the use pulleys, gears and chain drives in varied robotic applications. *(8.2.12.C.4)*
10. Develop work related skills, as well as gain a better understanding of technological products, systems, innovative design and engineering principles to become productive and technologically literate society members. *(9.2.12.C.3, CRP 1-12)*

**Assessment:**

1. Teacher observation
2. Classroom participation
3. Performance Rubrics
4. Project evaluations
5. Performance on quizzes/tests

**Board Adopted Text:**

None