

High Ability/GT Classes

7th Grade Pre-Algebra: This course is designed for students who are on track for Algebra I in the following year. Instruction will include application of skills to prepare students for Algebra I. The curriculum will include computation with rational numbers; conversions among fractions, decimals, and relations and functions; surface area and volume; linear equations and inequalities; data collection and display including box plots and scatter plots; probability for simple events; probability of independent and dependent events; and theoretical probabilities and experimental results.

7/8th Grade High Ability Reading: The High Ability classes follow the same curriculum pace as the general reading and language arts class, however, additional components are added to challenge this group of high achievers. Along with higher-level text and discussions, more advanced writing standards are required from the students while they learn rigorous writing skills and strategies. Additional reading requirements must be met throughout each quarter to meet the demands of this challenging class.

8th Grade Algebra: Algebra I continues the study of algebraic concepts including operations with real numbers and polynomials, relations and functions, creation and application of linear functions and relations, and an introduction to nonlinear functions. Appropriate technology, from manipulative to computers, will be used regularly for instruction and assessment. In order to receive high school credit, students must earn a grade of "C" or higher, receive their teacher's recommendation, and must earn either two (2) math credits or two (2) credits in physics during the student's last two years in high school.

8th Grade Introduction to Engineering Design (IED): Students develop and use problem solving skills as they move through the design process, develop solutions using elements of design and manufacturing concepts and develop hand sketches using 2D and 3D drawing techniques. (Full Year Course = High School Credit)



Barker Middle School STEM Course of Studies Course Descriptions 2017–2018

Principal: Mrs. Karen Puchalski

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	Grade 7	Grade 8
Block	Language Arts Math Science Social Studies Reading	Language Arts Math Science Social Studies Reading
	Wellness	Wellness
Related Arts (Directed Classes)	Gateway to Technology Choose Band or Chorus OR	Gateway to Technology Choose Band or Chorus OR
Related Arts (Choice Classes)	Digital Art I & Problem Based Technology	Digital Art I & Problem Based Technology/ College and Career
Band and Chorus are year-long courses. All other courses are semester long.	HIGH ABILITY: Course options will be available for identified high ability students, 7-8, in math, language arts, and related to the magnet theme of Barker Middle School. Limited courses available for high school credits.	



Barker Middle School STEM Classes 2017-2018

Gateway to Engineering 7-8

Directed Related Arts Classes

1 Semester Each

Technology & Engineering Education provides students with hands-on, problem-based learning opportunities that introduce the principles to develop, produce, use, and assess products related to engineering and technology. Students additionally develop individual and teamwork skills to participate in society and the workplace. Activities are focused on content related to engineering and technology as a body of knowledge, using resources and actions to: (1) apply engineering design, (2) use processes to produce artifacts and systems, (3) use devices, tools, and systems safely and appropriately, and (4) assess impacts on society and the environment.

This series of courses is designed to challenge and engage students' imagination and curiosity through the following units of study:

Grade 7

- **Design and Modeling** – Students use geometry, problem-solving, teamwork, and project management skills to design and develop product assembly prototypes.
- **The Science of Technology** – Students apply scientific principles and concepts of simple machines and energy to solve real-world problems.
- **Energy and the Environment** – Students investigate the importance of energy in our lives and the impact that using energy has on the environment. They will design and model alternative energy sources. Students evaluate ways to reduce energy consumption through energy efficiency and waste management techniques.

Grade 8

- **Design and Modeling** – Students use geometry, problem-solving, teamwork, and project management skills to design and develop product presentations.
- **Automation and Robotics** – Students design and build automated projects that incorporate the principles of electrons, physics, and robotics.
- **Green Architecture** – In this unit, students are introduced to architectural plans, construction styles, alternative materials and processes, dimensioning, measuring, and architectural sustainability. Students use a 3-D architectural software program to create an environmentally friendly home using shipping containers.

Problem Based Technology — Grade 7

In this one-semester course, students will work collaboratively to identify a real-world scientific problem. They then work through the scientific process using a variety of technology-based research and presentation tools to report their findings. Each grade level focuses on a different set of problems that coincides with the science standards for that grade.



Problem Based Technology/ College & Career — Grade 8

In this one-semester course, students will work collaboratively to identify a real-world scientific problem. They then work through the scientific process using a variety of technology-based research and presentation tools to report their findings. Each grade level focuses on a different set of problems that coincides with the science standards for that grade. Also, students will be introduced to the knowledge, skills and behaviors all students need to be prepared for success in college, career and life. The focus of the course is the impact of today's choices. Topics to be addressed include twenty-first century life and career skills; higher order thinking, communication, leadership, and management processes, exploration of personal aptitudes, interests, values, and goal; examining multiple life roles and responsibilities as individuals and family members; planning and building employability skills; transferring school skills to life and work; and managing personal resources.

Digital Art 7-8

Digital Art I — Grade 7

This course introduces students to user-friendly media programs that allow students to enhance their creativity from a technological aspect. Students will explore digital art methods through designing logos, digitally manipulating and enhancing photographs, and creating photo collages, flyers, and posters as a means of communicating their message effectively through effective graphic layouts and designs.

Digital Art II — Grade 8

This course allows students to review and show off their digital design skills by independently creating a digital portfolio using different programs. Students will be exposed to the many career choices in digital art and graphic design. They will also employ skills and techniques digital media programs offer for advanced users.

Science

Technology

Engineering

Math

