

MIDDLE SCHOOL STEM MAGNET PROGRAM

QUESTION & ANSWER GUIDE



Robbinsdale Middle School



Q. What comprises the RMS STEM Magnet Program?

A. The STEM Magnet Program includes three major components:

Engineering: All students in the program will be enrolled in a special year-long course that includes the STEM areas of science, technology, engineering and mathematics. The curriculum includes Gateway to Technology (GTT) developed by Project Lead the Way (see mnpltw.org) and is taught by the technology education department.

Science: Science and math teachers at RMS will also receive training in the GTT curriculum and will work with the GTT teachers to sharpen an integrated approach to teaching science, technology, engineering and math.

Design technology: The skills and concepts of design technology will be taught in every classroom at RMS and across all subjects. Training in design technology is offered through the International Baccalaureate Organization, thereby ensuring a strong link between the IB Middle Years Programme and the MS STEM Magnet Program. Having a focus on design technology will provide a unique and signature approach to the IB Middle Years Programme at Robbinsdale Area Schools.

Q. Will the students enrolled in the STEM Magnet Program also participate in the International Baccalaureate Middle Years Programme (IBMYP) at RMS?

A. Yes. All students attending RMS participate in the prestigious IBMYP. An honors track is provided for highly motivated students.

Q. Can my student also be enrolled in the MYP Honors courses at RMS?

A. Yes. Students in the STEM Magnet Program at RMS can also take MYP honors courses.

Q. How many students will be enrolled in the MS STEM Magnet Program at RMS?

A. Sixty to 90 students will be enrolled at each grade. The program will open with grade 6 students in school year 2013-14. By school year 2014-15 the program will include students in grades 6 and 7, and by 2015-16 it will be open to students in grades 6-8.

Q. Do students in the STEM Magnet Program take all of their classes together?

A. No. Students will be together for the year-long engineering course. They may or may not be enrolled in other courses together. Students enrolled in the STEM Magnet Program as well as the MYP honors program will have more classes together.

Q. Does enrollment in the STEM Magnet Program depend on prior academic achievement?

A. No. Students are admitted based on their interest in STEM and STEM related careers. All students can be successful in the program and all students will be challenged academically. Students can be successful whether they enter at grade six, seven or eight.

Q. If students in the STEM Magnet Program take a full year engineering course, what other class(es) do they miss?

A. Students take the full-year GTT engineering course instead of other Allied Arts options or instead of the Math Extensions course. The GTT curriculum provides students with many opportunities to study the skills and concepts taught in Math Extensions. The GTT engineering course also allows for exciting enrichment opportunities in STEM related subjects.

Q. Will some students have enrollment priority?

A. Yes. Students matriculating from the School for Engineering and the Arts (SEA) will have enrollment priority. Additional seats will be available for all other district students. Openings will be filled through a lottery if the number of applications exceeds the number of available seats. A wait list will be created during the lottery process and as seats become available, students will be enrolled in order of the wait list.

Q. Is transportation to RMS provided for students in the STEM Magnet Program?

A. Yes. Transportation is provided to district students enrolled in district elementary magnet schools and in district middle school magnet programs. This practice is reflective of what surrounding districts offer for magnet schools and programs. The district's elementary magnet schools include Robbinsdale Spanish Immersion School and the School of Engineering and the Arts at Olson Elementary. The district's middle school magnet programs include the Spanish Immersion Program at Plymouth Middle School and the STEM Magnet Program at RMS. Both of the district's middle schools provide an honors program.

Q. Will upgrades be made to the facilities at RMS for the STEM Magnet Program?

A. Yes. One classroom will be upgraded for the engineering course and another classroom will become a new specialty science lab.

Q. Will training be provided for RMS staff?

A. Yes. Training in at least three STEM related areas will be provided for the RMS staff:

- 1. Gateway to Technology (GTT):** The math and science teachers who attend GTT training will work with their colleagues to incorporate STEM skills and concepts into science and math subjects as applicable.
- 2. STEM:** All science teachers at RMS will be able to participate in specialized STEM training from Science House, a teacher training program supported by the Minnesota Science Museum.
- 3. Design Technology:** All RMS teachers will eventually receive training on the MYP approach to design technology in order to provide an integrated STEM curriculum across every course.

Q. Does the district offer engineering courses in the High Schools?

A. Yes. Students in grades 9-12 can register to take engineering and other STEM related courses at either Robbinsdale Armstrong or Robbinsdale Cooper High School. Both schools offer robust math and science classes, and courses through Project Lead the Way, the national pre-engineering program. Planning is underway for additional STEM and engineering courses for high school students. Students enrolled in the MS STEM Magnet Program at RMS will be well prepared to succeed in any engineering course at the high school.

PROJECT LEAD THE WAY - GATEWAY TO TECHNOLOGY

CURRICULUM UNITS FOR THE MIDDLE SCHOOL

The PLTW Gateway To Technology (GTT) program features a project-based curriculum designed to challenge and engage the natural curiosity and imagination of middle school students. They envision, design and test their ideas with the same advanced modeling software used by companies like Lockheed Martin, Intel and Sprint. They study mechanical and computer control systems and explore the importance of energy, including innovative ways to reduce, conserve and produce it using solar, thermal and wind power.

Throughout GTT, students acquire knowledge and skills in problem solving, teamwork and innovation as well as explore STEM careers. Taught in conjunction with a rigorous academic curriculum, the program is divided into seven, nine-week independent units, assuming a 45-minute class period. Schools implement both foundation units and may add any combination of the specialization units.

GTT, intended for grades six through eight, is designed to spark an interest in STEM subjects and prepare students for further study in high school.

FOUNDATION UNITS

- **Automation and Robotics (AR)** Students trace the history, development, and influence of automation and robotics. They learn about mechanical systems, energy transfer, machine automation and computer control systems. Students use a robust robotics platform to design, build and program a solution to solve an existing problem.
- **Design and Modeling (DM)** In this unit, students begin to recognize the value of an engineering notebook to document and capture their ideas. They are introduced to and use the design process to solve problems and understand the influence that creative and innovative design has on our lives. Students use industry standard 3D modeling software to create a virtual image of their designs and produce a portfolio to showcase their creative solutions.

SPECIALIZATION UNITS

- **Energy and the Environment (EE)** Students investigate the impact of energy on our lives and the environment. They design and model alternative energy sources and participate in an energy expo to demonstrate energy concepts and innovative ideas. Students evaluate ways to reduce energy consumption through energy efficiency and sustainability.
- **Flight and Space (FS)** The rich history of aerospace comes alive through hands-on activities, research, and a presentation in the form of a short informational video. Students explore the science behind aeronautics and use their knowledge to design, build and test an airfoil. Custom-built simulation software allows students to experience space travel.
- **Green Architecture (GA)** In a world of reduced resources and environmental challenges, it is important to present the concept of “being green” to the next generation of designers and builders. In this unit, students are introduced to architectural plans, construction styles, alternative materials and processes, dimensioning, measuring and architectural sustainability. Students use a 3D architectural software program to create an environmentally friendly home using shipping containers.
- **Magic of Electrons (ME)** Through hands-on projects, students explore the science of electricity, behavior and parts of atoms, and sensing devices. Students acquire knowledge and skills in basic circuitry design and examine the impact of electricity on our lives.

STEM MAGNET	Grade 6	Grade 7	Grade 8
PERIOD 1 Every Day	Math	Math	Math
PERIOD 2 Every Day	English/Lang. Arts	English/Lang. Arts	English/Lang. Arts
PERIOD 3 Every Day	Science	Science	Science
PERIOD 4 Every Day	Social Studies	Social Studies	Social Studies
PERIOD 5 Global Language or Reading Emphasis	½ Developmental Reading ½ Global Language	At PMS: ½ Dev. Reading ½ Global Language At RMS: Global Language	Global Language
	or Workshop Reading	or Workshop Reading	or Workshop Reading
	or Intervention Reading	or Intervention Reading	or Intervention Reading
PERIOD 6 Every Other Day	Physical Education and Music or Physical Education and 2 Allied Arts	Physical Education and Music or Physical Education and 2 Allied Arts	Physical Education and Music or Physical Education and 2 Allied Arts
PERIOD 7	4 quarters of Allied Arts Art, Tech Ed - GTT, Health, FACS, AVID or Math Extensions full-year	4 quarters of Allied Arts Art, Tech Ed - GTT, Health, FACS, AVID or Math Extensions full-year	4 quarters of Allied Arts Art, Tech Ed - GTT, Health, FACS, AVID or Math Extensions full-year
PERIOD 7 STEM Magnet Every Day	Additional STEM Gateway to Technology curriculum Including inquiry-based science, technology, engineering and math	Additional STEM Gateway to Technology curriculum Including inquiry-based science, technology, engineering and math	Additional STEM Gateway to Technology curriculum Including inquiry-based science, technology, engineering and math