

Course Syllabus

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Class Website: robotics.teameureka.net

STEM FLL / Robotics MS

Course Description: This class will focus on S.T.E.M., primarily in the area of engineering and technology. Students will have the opportunity to participate in FIRST Robotics Competition. This is a unique, engaging, and fun science and engineering-based robotics program that ignites an enthusiasm for discovery, science, and technology. Each year teams embark on an adventurous Challenge based on current, real-world issues. Guided by a team coach and assisted by mentors, the kids learn to do the following: (1) research and solve a real-world problem based on the Challenge theme, (2) present their research and solutions, and (3) build an autonomous robot using engineering concepts that will out-perform other teams in a series of challenges based on the annual Challenge topic. The three top teams in our class will go on to the State Competition in Bozeman in the early spring. Additional technology topics will be covered as time permits around the competition schedule.

STEM FTC / Robotics HS

Students break into teams of three to six to design, build and program robots with each student taking on different roles. Several travel teams may be selected to compete at regional qualifiers to try for a slot in the state competition at MSU in Bozeman. Travel teams will be selected based on classroom effort, competitiveness of robot design, and team cooperation. It is possible that all teams will be able to attend to compete. The class will include creating code for an Android App using Java and Android Studio. The robot will include configuring and connecting to an electronic micro-controller. In addition, students may learn basic fabrication skills associated with metal and plastics construction to include CAD design, CNC operation and welding. These skills will all be applied using the engineering and mechanical Design Process along with documentation of the entire process resulting in an original robot design to be hand built by the team. Teamwork and collaboration are vital to being successful in this class. Problem solving, troubleshooting and patience are skills that are important and will be developed in this class.

Computer Science & Robotics Rotation Elective MS

Course Description: A one quarter (apx. 9 week) exploration of basic computer sciences, with a focus on simple programming. Topics such as learning to manage & customize internet tools,

layout, format and create custom formulas within spreadsheets, and program in HTML and graphics programming languages. Students will also be introduced to Lego EV3 robotics design and Mindstorms programming.

Course Topics

We will be working on a wide variety of technology topics, to include: computer hardware and design, spreadsheet functions and formatting, as well as an introduction to HTML, JAVA and Robotics programming. Some of the projects are designed as self-paced units with a defined timeline, allowing students to work ahead and/or deepen their understanding with additional resources.

Technology

Students are expected to bring their Chromebooks (CB) to class each day fully charged. Most in-class work will be done using your CB. On some occasions other school computer labs may be used when necessary. The majority of assignments will be completed online using your Teameureka Apps account and Google Classroom. Many assignments require listening to, or recording audio, therefore, it is recommended to have a pair of 'earbud' headphones for personal use.

Text/Materials

- Information and assignments for this class will be posted and completed online.
- Access to Teameureka account. via computer lab or Chromebook
- Pens, pencils, paper.
- Audio Earbuds

Expectations:

Behavior, Acceptable Technology Use, Attendance, work ethic and other such expectations are fully outlined in the Middle School Student Handbook. Students are expected to know and follow these guidelines in class at all times. In addition, students participating in the FIRST competition will learn about and be held accountable to the core values of FIRST: 'Gracious Professionalism,' and "Coopertition." (see [FIRST.org](https://first.org))

Grades and Grading Policy

See the Middle School Student Handbook for policies and grading scales. It is the student's responsibility to regularly check their Family Link account and bring any discrepancies to the instructor's attention.

See the [Middle School Student Handbook](#) for all policies regarding behavior, consequences,

grading, and technology acceptable use.