



Colorado Association of Black Professional Engineers and Scientists

CABPES is pleased to announce our 2009/2010 programs. The programs include the JETS (Junior Engineers, Tomorrow's Scientists) engineering classes, the Math Enrichment Program and the SAT Preparation Program.

JUNIOR ENGINEERS, TOMORROW'S SCIENTISTS (JETS)

JETS classes are mostly held on Tuesday evenings with exception to a few classes that which may be offered on Wednesdays. Classes to be offered this year are:

- **Aerospace Engineering** introduces students to the fundamentals of aerospace engineering including principles of aerodynamics from the subsonic to the supersonic range, propeller and jet engine design, the basic control and flying surfaces of an airplane, and viewing real working aircraft at the Wings Over the Rockies Museum. The class also covers satellite design, and operations technology. The students are asked to complete classroom problems using NASA simulation software in addition to hands-on experience with the Microsoft Flight Simulator at the Museum. *Students must be in grades 9 to 12.*
- **Architecture** introduces students to this exciting profession and emphasizes the importance of the internal and external relationships of buildings. Students study the four basic steps to good design concept: site analysis, architectural program, site design and design of spaces and details. They work on a project that gives them an opportunity to experience the process necessary for completing an actual architectural project. *Students must be in grades 9 to 12.*
- **Civil Engineering** presents a variety of topics that cover all facets of civil engineering. Emphasis is placed on interactive learning and student participation in the following topics: surveying; concrete design including construction of actual concrete beams; wastewater and water treatment; urban planning and cost estimating; introduction to GIS (geographical information systems); dam design and construction; hydrology; railroad transportation. Several other areas are taught, with the final being bridge design; concluding in the design, cost estimation, and construction of scale-model wooden bridges. *Students must be in grades 8 to 12.*
- **Computer-Aided Design** uses Pro/Engineer software programs to introduce students to Computer-Aided Design programs in an effort to provide them with a better understanding of engineering and design software tools and applications. Students learn about the world of 3-D modeling and virtual simulation; create their own 3-D models; learn the elements to creating conceptual and detailed designs; gain an understanding of design integration; and learn how designers and engineers work together to produce a final product. *Students must be in grades 9 to 12.*
- **Computer Programming and Web Design** is designed to introduce students to the fundamentals of computers by providing each student with a "hands-on" computer experience. The topics will include computer design that offers exposure to the internal and external components of the computer; an introduction to

programming with Qbasic and Visual Basic; internet searches; and a section on web design that will feature designing a CABPES website for a final project. *Students must be in grades 6 to 8.*

- **Construction Engineering** introduces students to the various avenues within the construction industry. Studies include concrete and steel, construction plans/drawings, virtual design and construction, green building and much more. Students will have a variety of opportunity with "hands-on" activities and field trips. This course will include field trips that may be on Saturdays, replacing Thursday classes. Students should be prepared to attend the field trips. *Students must be in grades 8 to 12.*

- **Electronics/Electrical Engineering** consists of a beginner's introduction to electronics, giving students exposure to basic concepts, as well as the opportunity to gain insight into a career in electrical engineering. Students explore electronics by discussing and demonstrating basic electronics principles, components and products. Topics include the structure of the atom, concepts of voltage, current, resistance, frequency, digital logic, and how engineers develop a product. There are "hands-on" labs built around the class discussions, in which they learn concepts such as Ohm's Law and how to use electronic test equipment. *All students may participate in this class.*

- **First LEGO League.** CABPES will also participate in the First LEGO League (FLL) for the first time this year. FLL is a global robotics program that ignites enthusiasm for discovery, science and technology. *Students must be ages 9 to 14.*

MATH ENRICHMENT PROGRAM

The Math Enrichment Program meets on Monday and Wednesday evenings this year. It offers support to students that are struggling with math through individual tutoring and skills development to ensure that students get the assistance that they need with their homework and extra attention to the topics with which they are struggling. Students are required to bring their homework and supplementary worksheets will be used to improve skills. Testing will be done at the beginning of the program to determine the student's math level. Participation in the Math Enrichment Program will require periodic reporting of school grades.

SAT PREPARATION PROGRAM

The SAT Preparation Program offers session in the fall and spring on Wednesday evenings. The program goal is to assist students in their preparation for the SAT. We will familiarize the student with: (1) what is measured by the SAT, (2) the structure of the test. (3) test taking tips to enhance performance, (4) the major concepts of the test and (5) strategies for each test section. It will also provide students with an opportunity to develop an essay, college application and scholarship application.

Fee Structure

JETS	\$30 per year
Math Enrichment Program	\$50 per semester
SAT Preparation Program	\$30 per course