Course Descriptions

Introduction to Engineering: Students are introduced to the history of engineering, with its many categories and applications. Students are introduced to Microsoft PowerPoint and utilize this software through a classroom presentation. The System Model is introduced and is used to illustrate the Engineer's flowchart. Finally, a "Mouse Trap" is conceptually designed, drawn up using the multi-view sketch, then constructed using basic materials, tying in all of the Engineering concepts. In this class, students work in groups to solve engineering problems and apply them to real-life applications. The major project is the Mouse Trap.

Biotechnology: An exploratory class of the Sciences and their application to the field of technology. Study topics include ethics and practices, the use of DNA, and careers based in Biotechnology. Main activities include ethics debate, DNA extraction lab, and research on the seven main areas within Biotechnology; from enzymes to aqua/agriculture. Using a laboratory environment, students will reproduce basic biotechnology experiments and re-enact real-world scenarios, debating controversial ethical conflicts and reach professional conclusions on these subjects. Major projects include DNA extraction and PowerPoint presentation.

Application of Computers: A creative class that utilizes the computer as its primary focus. The use of Alice programming with a Java backend is the theme. Major projects include: Alice programming world that uses control statements. The simulation should include different objects with synchronized movement to music.

Energy: A hands-on course which asks the question, "What do we do when we run out of oil?" All common forms of energy use are examined, spanning from 1988 to the present. Alternative energy sources are examined, including solar, wind, geothermal, biomass, and hydro-generated. Students will be introduced to the 1973 E.E.S. Machine to try to save the simulated world form a life-ending energy crisis. Students learn how to operate steam engines, then produce electricity with their steam engine power plant. Finally, students learn about internal combustion engines, and run them in a lab. Major projects include: Internal-Combustion Thermal Dynamics, Steam-Engine Power Plant and the E.E.S. Machine.

Communications: An in depth exploration of different modes of communication. Study topics include digital communications. Communications is further examined through the explanation of the communications model. Major projects include: Packet tracer simulation.

Electronics: This course is intended to introduce students to basic electronic systems and concepts. Electronic circuit components are utilized to create alarm systems, doorbells, lighting systems and automatic curtain systems. The major projects are the battery and water heater.

Statics and Structures: A challenging course where hands-on learning provides students with mathematical concepts behind today's structures. Students will learn the fundamentals of engineering by applying basic math and science skills in order to understand Statics and Structures. Students will demonstrate their knowledge by solving problems relating to Statics and Structures. Newton's Laws of Motion, Gravitation, and Systems of Units are introduced, aiding in the comprehension of engineering related mathematics. The "Tower Project" is the culmination of all of these skills covered in Statics and Structures.