



Course Title: Principles of Engineering (POE)		
<p><u>Description:</u> POE is a course that helps students understand the field of engineering and engineering technology. Exploring various technology systems and manufacturing processes help students learn how engineers use math, science and technology in an engineering solving process to benefit people. The course is heavily project-based and includes machine control through computer programming. As of 2017-2018, POE will count as 2 hours of Science Physics credit as long as being taught by a Physics endorsed instructor. This course corresponds to EGT410 in the DMACC course guide.</p>		
<u>Reporting Topic</u>	<u>Course Level Standards</u>	<u>Competency Statement</u>
<u>Mechanisms</u>	<ul style="list-style-type: none"> Demonstrate application of simple machine and gear systems. (POE.SM01) 	Students will demonstrate mechanisms through the application of theory-based calculations accompanied by lab experimentation.
<u>Machine Control</u>	<ul style="list-style-type: none"> Engineer and program robots to perform tasks within certain criteria and constraints. (POE.MC02) 	Students will control mechanical processes using computer software and hardware.
<u>Energy Sources</u>	<ul style="list-style-type: none"> Build electrical circuits and energy efficient systems. (POE.ES03) 	Students will explain the conservation of energy and power and calculate efficiencies of mechanical and electrical systems.
<u>Energy Applications</u>	<ul style="list-style-type: none"> Analyze and construct alternative energy sources and calculate energy transfer and flow. (POE.EA04) 	Students will explain and demonstrate alternative energy sources and calculate energy transfer and flow.
<u>Statics</u>	<ul style="list-style-type: none"> Analyze, construct and calculate static equilibrium within bridge trusses. (POE.S05) 	Students will identify and calculate forces acting on a body when it is in static equilibrium specifically as it relates to bridge truss calculations.
<u>Material Properties</u>	<ul style="list-style-type: none"> Analyze and present the product life cycle of a product. (POE.MP06) 	Students will explain the basic categories and properties of material and how this relates to a product life cycle.
<u>Material Testing</u>	<ul style="list-style-type: none"> Analyze and calculate stress/strain curves. (POE.MT07) 	Students will explain, calculate and interpret material testing data such as stress/strain curves.
<u>Fluids</u>	<ul style="list-style-type: none"> Analyze and calculate dynamics of fluids (POE.F08) 	Students will compare and contrast pneumatic versus hydraulic systems and how they are designed to manipulate work and power.
<u>Statistics</u>	<ul style="list-style-type: none"> Use statistics and probability to analyze and interpret data. 	Students will statistically gather, compile and



	(POE.ST09)	interpret data.
<u>Kinematics</u>	<ul style="list-style-type: none">Describe and calculate the velocities and trajectories of various bodies. (POE.K10)	Students will explain and calculate kinematic motion such as free-fall and projectile motion.