

NOUVEL CATHOLIC CENTRAL HIGH SCHOOL
INTRODUCTION TO ENGINEERING SYLLABUS

COURSE DESCRIPTION:	<p>This is an introductory or exploratory course aimed at students interested in pursuing engineering at college. As such, it does not attempt to provide a rigorous engineering curriculum. Rather it is a project-based, problem-solving approach where the students are given situations and then allowed to solve them using the following steps:</p> <ol style="list-style-type: none">1. Research the problem and see how engineers might approach it;2. Create a blueprint to solve the problem;3. Build the structure and modify the blueprint as necessary;4. Write a paper describing the building process and any problems encountered along with their ultimate solutions;5. Test the structure;6. Analyze their structure's performance either orally or by paper. <p>This is a one-semester course</p>
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<p>MAJOR COURSE GOALS:</p>	<p>By the end of the semester:</p> <ol style="list-style-type: none"> 1. The learner will research and present information on “What is an engineer?” along with descriptions of five different engineering fields, local universities that offer these degrees, and tuition and starting salaries; 2. The learner will research and build a popsicle bridge to span a gap of 15” and support the most mass possible; 3. The learner will research the 5 simple tools upon which most other tools are based. This will introduce mechanical advantage; 4. The learner will research and present Bernoulli’s Principle to the class and then us this principle to design a glider capable of traveling 75% of the distance across the basketball court; 5. The learner will design and fold a paper boat capable of supporting as many pennies as possible; 6. The learners will brainstorm and design a structure capable of protecting an egg falling from the 3rd floor lab window; 7. The learners will work in collaborative groups to design and build a trebuchet capable of throwing a 4 lb beanbag 50% of the distance across the basketball court;
<p>COURSE ASSESSMENT PLAN:</p>	<p>Each goal above is roughly broken down into four assignments:</p> <ol style="list-style-type: none"> 1. Research, design and produce a blueprint; 2. Build a structure; 3. Reflect on the building process; 4. Test the structure and assess oneself on accomplishing the goal, or not.
<p>SUPPLIES AND MATERIALS NEEDED:</p>	<p>Building materials for the small projects will be supplied. The larger trebuchet will require students to purchase wood, rope, and other materials.</p> <p>Tools are available and students are expected to follow the safety rules they signed during their Sophomore year for Chemistry class.</p> <p>All projects are constructed in class and are not allowed to be taken home until finished.</p>
<p>EXTRA HELP:</p>	<p>The instructor will be available everyday from 7 AM until school starts, and for 30 to 40 minutes after school finishes. Students are encouraged to come in for help.</p>

INSTRUCTIONAL PHILOSOPHY:	Being a project-based class, the students will utilize research and other materials to teach themselves how to approach the problem scenarios. A successful student needs to adapt materials to the given situation, and use out-of-the-box thinking when confronted with a challenge.
MAJOR COURSE PROJECTS AND INSTRUCTIONAL ACTIVITIES:	Every topic is a project. Four to five times during the term students will formally present research or projects to the rest of the class.
CLASSROOM EXPECTATIONS:	Students are expected to arrive and be in their desks by the time the bell rings. Students should respect each other and the teacher. Students who miss class due to sports or other reasons are expected to be responsible and give plenty of notice that they will be gone. In this way they can get assignments before they go.
HOMEWORK POLICY AND GRADING SCALE:	Homework needs to be turned in on time and be of high quality. For an upper level course like this it is expected that the students will have work in on time, or have contacted the instructor in the case of unusual circumstances. Work turned in more than 2 weeks late will receive no credit unless extenuating circumstances apply.
CONTACT INFORMATION:	
Teacher:	Deb Yats
Email Address:	dyats@nouvelcatholic.org
Phone Number:	The email above is the fastest and surest way of contacting the instructor.