



Course Title: Explorations in Technology (TEAC 105)

Course Description:

This course provides an introduction to careers and basic skills in Computer Science, Electronic and Computer Engineering Technology, Civil Engineering Technology, and Mechanical Engineering Technology. Students will complete a project in each of the 4 areas. This course is intended to provide participants with an opportunity to explore the 4 technology areas, and support their career and post secondary decision- making.

Learning Outcomes:

Upon successful completion of the course students will be able to:

1. Identify careers in the 4 technology fields (Civil, Mechanical, Electronics and Computer Science)
2. Civil - Identify various civil engineering projects and the role that civil engineering plays in each, apply civil engineering methods and calculations to a simple design and civil engineering project
3. Mechanical - demonstrate simple 3D CAD modeling skills, basic shop skills and safety techniques, and identify the design elements associated with the completion of a small mechanical engineering project.
4. Electronics - create a simple electronics circuit, describe simple microcontroller programming concepts, and list the elements of and build a small electronics project.
5. Computer Science - use a programming language to examine the fundamentals of software design and development.

Course Details:

Length of Course	36 hours – 12 weeks
Course Structure	3 hours per week - 9 hours per Technology area
Credits	2 Credits
Class Size	16 minimum – 18 maximum students
Anticipated Audience	Grade 10-12 students
Prerequisites	None
Start /End	February 3 – May 18, 2012
Dates	Feb 3, 10, 24; March 2, 9, 16; April 13, 20, 27; May 4, 11, 18
Time	Fridays - 3:00pm – 6:00pm
Location	Interurban Campus – Technology Building - Room 181

Course Costs:	Application Fee	\$36.41	Student responsibility
	Tuition Fee	\$438.90	School District sponsorship
	Total	\$475.31	

Week	Technology	Hours	Topics Covered
Orientation – Prior to course start host an orientation for registered students include: tour, introduction to staff			
1	Computer science	3	Why learn about computer science? Try to imagine a world without computers. Computers are now part of our everyday lives, and we will look at some of their applications. Also training and careers. We'll be learning how to control computers. We'll start with an overview of what it means to program a computer, and learn the basics about using our animation software. We'll start with a small animation project.
2	Computer science	3	We'll continue using the software to learn how to make our animations do more interesting things. While getting your animated objects to move, wave, jump, fly and so on, you'll learn fundamental programming skills. You'll work on another project using these skills
3	Computer science	3	Some final programming skills, and then time for you to create your own animation. It could be a story. It could be a game. It is up to you and your imagination. You just need to incorporate a defined set of the skills you learned.
1	Civil	3	Introduction to Civil Engineering (environmental, geotechnical, traffic/highways, structural); How civil engineering affects every aspect of our lives; what happens when these things go wrong; introduction to statics and earthquakes; introduction to Pasco Structures System
2	Civil	3	Construction and testing of Pasco structures
3	Civil	3	Finish project testing and discussion of results (assessment occurs through verbal questioning during discussions in groups); Guest speaker
1	Mechanical	3	An introduction to mechanical engineering: What is mechanical engineering technology, and why do I care? An example of a final student project in mechanical engineering technology, with discussions on project management, and 3D modeling using computer-aided-drafting (CAD). A discussion of the design process, and an introduction to the TEAC 105 final project: <i>the trebuchet</i>
2	Mechanical	3	A Midterm Quiz and a design case study with discussion. A machine shop tour with a discussion of the functions of the various machines, as well as machine shop safety. As well, some time will be allotted to work on trebuchet design. A discussion of student design successes and shortcomings, with time for design improvements.
3	Mechanical	3	Trebuchet construction and assembly. Interactive trebuchet design time. Trebuchet construction, testing and competition. Course wrap-up.
1	Electronics	3	Electronics in our lives: Electronics in modern consumer electronics such as MP3 players and iPhones. Introduction to electronics parts and systems through teardown of electronics devices such as Guitar Hero guitar and Beatmania DJ console. Electronics training and careers.
2	Electronics	3	Electronics hardware: Review of electronics parts. LED biasing. Soldering. Construction of musical memory game.
3	Electronics	3	Electronics software: Basic microcontroller programming concepts. Coding a song. Programming and customizing a musical memory game.
Wrap-up – The final day of the course to include a course wrap-up that includes a review of the 4 technology areas and evaluation (20 minutes)			