TGS 2009 Course Descriptions

Students that attend TGS can expect to embark upon engaging and stimulating subject matter. Coursework consists of a combination of STEM (Science, Technology, Engineering & Math) classes as well as courses that explore the broader impact of science and technology in society. Students also engage in classes aimed at improving their general and technical writing abilities. In addition TGS students give in-depth consideration to future educational and professional goals.

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Science, Technology, Engineering and Math Courses

Micro and Nano Technologies
Instructors: J. C. Chiao & Tim Sanchez

In this course, students will learn about advanced micro- and nano-technologies including micro-robots, nanomedicine, sensor and actuators, wireless systems, lasers, optical communications and digital imaging. We will also discuss the basic principles behind these advanced technologies and their potentials in the future.

The Chemistry of Investigation
Instructors: Guido Verbeck & Patrick Matous

This course will look at the foundational concepts of chemistry, (atoms, molecules, bonding, and structure) and apply these concepts to field analysis in the environment and crime scene. From this, students will establish an understanding of atoms and molecules, develop skills and introduce tools for chemical analysis, and utilize these chemical skills applied to real-world analysis of environmental concerns, and forensic investigations.

Endless Ideas
Instructors: John Ed Allen & Scott Dean

The math class offered at TGS is a collection of mathematical ideas that are both historically significant and intrinsically interesting. A collection of ideas will be explored ranging from the Mandelbrot Set to the percent of possible acute triangles in the universe. The topics will be explored through a number of methods including manipulation, simulation, programming and proof.

Green Solutions
Instructor: Cynthia Powers & Kevin Stevens

Advances in plant biology and finding new uses for plants and plant products will profoundly impact on our future. Plants are being turned to solve energy issues, provide new materials for industry, reduce the impacts of climate change and clean up polluted lands and waters. Students will examine the role that plants may play in addressing these problems by first studying plant growth and development then identifying unique characteristics that have pushed plants into the forefront of the current sustainability

movement. This course largely consists of guided laboratory exercises but will also include field trips, formal lectures and group discussion.

Energy Use and Our Future: what to do when we can't do it anymore?
Instructors: Srinivasan Srivilliputhur & Chris Smith

The Energy course will ask and discuss a variety of important questions related to our energy use habits and their likely impact upon our civilization. Our discussions will be framed around the likely energy alternatives to fossil fuels, and will encourage the students to critically analyze the outcome of changing our current energy consumption habits, especially associated costs and benefits to our society.

Courses Examining the Broader Impact of Science and Technology

Philosophy: The Big Questions
Instructors: Kevin Roden & Julie Brem

We live in a confused culture. The discussion taking place on the most meaningful topics is too often reduced to witty one-liners that can be placed on the bumper of a car. Philosophy helps us ask important questions to our culture, to our scholars, to our leaders, and, most importantly, to ourselves - all in the hopes of finding a way out of this confusion and sound-byte discourse. We will raise and explore answers to some of the big questions of human life, all the while asking how these questions relate to the project of science. Because scientific investigation often leads to intersections with important human questions, we will discuss how science relates to culture, religion, ethics, and other disciplines.

The History of Science and Technology
Instructors: Gerard O'Donavan & David Jensen

Grey's Anatomy? Charges of heresy? These elements will come into play during this survey course of the history of science and technology. This course will provide a broad overview of major figures and developments in a variety of areas. Each class day will be divided between a college level lecture format and hands-on activities over diverse topics ranging from micro-biology to Darwin.

Stop Motion Madness
Instructors: Jack Campbell & Jeff Seidal

Have you always wanted to make your own movie? Then this is the class for you. In this class you will work with a small group to create a stop motion claymation film from scratch. You will create a storyboard, develop characters, sculpt your characters, design a set, shoot the digital pictures and download your pictures into Flash to create your film.

The Impact of Music on Society
Instructors: Akira Sato & James Hannah

Does music affect society? Does technology affect music? This course will be an exploration of topics in the area music literacy, technology, survey of jazz, classical, rock and country.

Writing Courses

Catastrophes, Crises, and Cures
Instructors: Sam Matteson & Carolyn Matteson

Students will explore effective non-fiction communication about science, technology, engineering, and mathematics (STEM) topics of current interest and relevance to TGS 2009 focus. Participants will engage various forms of science writing by considering exemplars and by producing their own pieces in the same genres: informative essay, op-ed piece, white paper, and script to accompany multi-media presentation.

Comics, Superheroes, Society, and Technology
Instructors: Marshall Armintor & Kari Haile

An historical overview of what Will Eisner termed "Sequential Art" ("comics" to you and me), coupled with a tutorial in the grammar and design of comic-book narratives. The course will focus primarily on the superhero comic as a venue for addressing societal and political problems, specifically the critical response to the rapid development of science and technology in the 20th century. Other approaches to sequential art narrative (autobiography, historical account, satire, polemic) will also be covered.

Left Brain, Right Brain, and Ambidextrous Writing
Instructors: David Taylor & Sharon Kremer

The creation of something new is not accomplished by the intellect but by the play of instinct acting from inner necessity. The creative mind plays with the objects it loves. We play as we create. We create as we think. We think as we play. Humans have many different ways of thinking and responding: visually, intuitively, verbally analytically, sequentially, as well as looking first at the pieces then putting them together to get the whole (deductive reasoning) or looking at the whole picture then seeing the details (inductive reasoning).Join us in a journey into reading and writing to discover the pieces, the whole, the intuition, and the analysis that will enhance you and your writing.

Additional Courses

Mythbusting: Uncovering the Truth about Transitioning from High School to College
Instructors: Moe McGuinness & Jennifer Akins

This interactive course will set out to expose the most commonly held misconceptions about making the transition from high school to college so that students will feel empowered to embark on a successful college journey. Students will begin securing the tools and strategies necessary to achieve excellence both inside and outside of the classroom through collaborative discussion and research. We will assist students in navigating the college selection and application process as well as provide practical advice for ensuring a positive initial college experience. Students will exit the course with a framework in hand for making the next steps towards fashioning an ideal education.

Life Directions
Instructors: Donna Fleming, Kyle Bewsey & Jason Hindman

"Life Directions" is an interactive program to help high school students think about their future life goals. The process involves activities that are designed to assist students in exploring their interests, values and abilities for the purpose of choosing occupations and educational areas that will meet their life goals. A career interest inventory called the Career Decision-Making System and a personality type indicator called the Myers-Briggs will be administered. Students will receive feedback on these results and will create a plan to research and explore the careers that are a good fit for them.

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