

STEM Society Meeting, March 11, 2014

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1 About the STEM Society and the STEM Society Website

STEM is an abbreviation for Science, Technology, Engineering and Mathematics. The acronym STEM is commonly associated with K-12 education, but our use of the term is only slightly bound to this meaning. There are over one hundred people on the mailing list, although a much smaller group attends any one meeting. We meet on the second Tuesday of each month at the Trailside Center at 99th and Holmes in Kansas City, Missouri. The meetings are open to all. The start time is 6PM. We make presentations, have

discussions, and have demonstration experiments. These relate to Science, the History of Science, Mathematics, Engineering, Philosophy and Technology at all levels. The topics have ranged from a technical discussion of the mathematics of General Relativity to scientific experiments for young students.

These meeting notes contain links to many other documents, which may be viewed or downloaded by clicking the link. A partial list of documents can be reached by clicking the heading **Documents**. The meeting notes may also be viewed in an archive file which is in the list of documents. Most of the documents are PDF files. They may be viewed or downloaded to the computer by clicking, provided Adobe Reader is present, or another program capable of reading PDF files. There are usually more documents available at the site than are listed under "Documents" because the documents.htm file is not necessarily kept up to date.

The web site is:

<http://www.stem2.org/>

Direct to the documents list:

<http://www.stem2.org/je/documents.htm>

Direct to the archive file:

<http://www.stem2.org/je/archive.pdf>

2 The March Meeting Announcement

The March meeting of the STEM Society will take place on the second Tuesday of the month, March 11, 2014, at the Trailside Center at 99th and Holmes in Kansas City, Missouri. The starting time is 6PM.

Some of the possible topics are:

- (1) A Discussion, and perhaps demonstration of Bacteria in the Mouth, and its relation to pH and other measurements, and to mean old Mr. Tooth Decay.

- (2) A Discussion of the Logistic Differential Equation, the Logistic Function, and Logistic Regression. This models various kinds of growth, such as

population growth, growth of bacteria, and so on. It was used in the idea of determining the date of peak oil production. As I write this a couple of days before our March meeting, I am not familiar with Logistic regression, the fitting of data to determine a Logistic Curve. Although I do have an idea about how it could be done. But I shall consult some statistics books on these techniques. This modeling is used apparently where data is binary, just having two values over say time.

(3) Maybe we will discuss some other topics in Mathematics, Physics, Technology, electronic gadgets and such.

(4) Perhaps some material on the life of the great mathematician Emmy Noether.

(5) We could Discuss Ludwig Wittgenstein and his famous work **Tractatus Logico-Philosophicus,**” a copy of which, I recently found at a thrift store. It is called **Logisch-Philosophische Abhandlung** in German, which translates as **Logical-Philosophical Treatise.**

(6) As always, there may be other impromptu topics, projects, shows-and-tells, new theorems, experiments, book reports, problems and solutions in mathematics, physics, engineering, biology, scientific biographies, and such.

The STEM Society Website:

<http://www.stem2.org/>

3 Kent Smith: Bacteria and Tooth Decay

Topics: (1) A cheap pH meter from Amazon.com, (2) UCLA Dentistry Professor Chu-hong Hu and his theory of fighting tooth decay with an antibacterial gum. Samples of antibacterial gum were distributed, as well as a copy of the following paper: **Development and evaluation of a safe effective sugar-free herbal lollipop that kills cavity-causing bacteria** by Chu-hong Hu et. al., International Journal of Oral Science, Vol 3, No 1, January 2011, (www.ijos.org.cn).

4 Jim Emery: Logistic Regression

Logistic Regression is a technique of finding an approximate probability distribution from sample data, where the random variable is usually the time when some binary event occurs, such as death from a disease.

This subject was suggested by Rich Kaufman, who encountered it in tutoring a Phd nursing student.

The material presented comes from a document I am writing called **Differential Equations**. See the section **The Logistic Differential Equation, and Population Growth**, and the section on **Logistic Regression**.

<http://www.stem2.org/je/diffeq.pdf>

5 Academic Freedom and the Corporatization of Universities

Some of us had a discussion about the transformation of universities from institutions devoted to education and the pursuit of knowledge, into profit making businesses. Some one mentioned the speech by Noam Chomsky titled **Academic Freedom and the Corporatization of Universities**. I looked this up, and it is very good. Everyone interested in Universities should read this.

<http://www.chomsky.info/talks/20110406.htm>

6 Testimony and Testament

This is a play about a local anti-nuclear weapons peace demonstration in Kansas City, where several demonstrators were arrested for trespassing, and about the subsequent trial, where the judge demonstrated the fundamental principal of justice that: **the punishment should fit the crime**. One would think that somewhere in their education, lawyers would have studied the principles of "Justice." But from the contemporary behavior of lawyers, and especially of prosecutors, this seems to be a rather uncommon educational experience. The play describes at least one judge, who is familiar with justice. The play is based on a report in the "National Catholic Reporter,"

which is a liberal Catholic newspaper. Henry Stoeber has given a talk at one of our meetings.

http://www.stem2.org/je/testimony_testament.pdf

7 Miscellaneous Topics and Events

(1) In a discussion of her bestselling book, author Amanda Ripley, an investigative journalist for Time and The Atlantic, follows three young Americans who have opted to study in Finland, Poland, and South Korea – hotbeds of education where rigorous teaching, parental input, and eager students are revolutionizing learning. **The Smartest Kids in the World - and How They Got That Way**

Wednesday, March 12, 2014

Reception: 6 p.m.

Program: 6:30 p.m.

Kansas City Public Library
Plaza Branch, 4801 Main St.

(2) Linda Hall March 13, A Talk on movie animation.

”Jason Schleifer, Head of Character Animation at DreamWorks Animation, will give us a behind-the-scenes look at the artistry, computer science, and technical innovations of the latest DreamWorks animated feature, **Mr. Peabody and Sherman.**”

(3) Linda Hall Library, March 17, A free Talk by the ”apparently insane” Theoretical Physicist Michio Kaku, on his new book, the **The Future of the Mind (2014)**, (The talk was transferred to Unity Temple on the Plaza, because of audience overflow. It was videotaped by C-SPAN, and should be on BookTV soon.)

(4) The NPR Radio program, which is called Ted Radio about TED talks: A Women with an Amputated arm, had her nerves connected to muscles in her chest. Sensors detect muscle movement, and send signal to robotic arm and hand. The women now controls her hand by her own thought, in the

natural way that we decide to move our own hands.

(5) The Wolfram Programming Language: Is to be embedded in future Raspberry π computers. These are tiny complete computers, running Linux, and costing around 50 dollars. The Wolfram Programming Language is related to the symbolic programming language at the base of the **Mathematica** symbolic Mathematics program, originally created by Steve Wolfram, the famous egomaniac prodigy Physicist \rightarrow Computer Scientist.