Congruent numbers and elliptic curves

A congruent number is a positive integer which is the area of a right triangle with rational sides. For example, six is a congruent number since it is an area of a right triangle with sides of lengths three, four and five.

Is one a congruent number? How about two, three, four and five?

Several cases have been solved over the years (including the above) but a complete solution for this two thousand years old problem was stunningly given by Tunnell in 1983. His beautiful solution combines several modern tools of Number Theory. In this lecture we will present the solution of the problem and the role of elliptic curves in the solution.
The fourth copernican revolution

The talk describes how Godel's discoveries from 1931 led (together with other developments) to the invention of the computer some 15 years later. I will also speak about Turing's famous paper from 1950, introducing the notion of "artificial intelligence".

יום שלישי 27/12/2011 15:00 אולס 5 באנגי היהודי, מדעטק

Prof. David Blanc (Department of Mathematics, University of Haifa):

The Geometry of the Earth

Since the times of the ancient Egyptians man has tried to understand the geometry of the earth we live on. We shall describe a topological method to verify by simple means that we indeed live on a sphere (more or less), and then explain the implications of this fact for the geometry of the earth, including implications for map-making.

יום שלישי 3/1/2012 12:10 אולס 6013 בניין רובין, אוניברסיטת חיפה
On Snakes, Mice and Mathematical Stability

The problem of stability of movement has been studied by many mathematicians for many years. A breakthrough was achieved some 90 years ago by the American mathematician Lokta and the Italian mathematician Volterra, following observation of the stability of a predator prey system of snakes and mice. The mathematical model lies in the basis of the theory of diagonal stability of matrices, and has applications in many fields such as ecology, economy, medicine etc.

Dr. Eli Berger (Department of Mathematics, University of Haifa):

Graph Theory in aid of Matchmaking

In this talk I will describe how a mathematical theory call "Graph Theory" can be used in solving several problems encountered during matchmaking. How can one match as many couples as possible (while preserving monogamy)? How can one make sure that the matched couples will prefer staying with each other to looking for another spouse? I will also explain why a matchmaker's job is much simpler if restricted to heterosexual clients (what is called in mathematical language a "bipartite graph") and discuss the challenges one might face when choosing not to make such restriction.