

VWO Exact plus, d.d 09-05-2007

Plan:

Op 9 mei jl. brachten negen leerlingen van het Pleincollege St. Joris te Eindhoven een bezoek aan de High Tech Campus. Zij zitten in een speciaal VWO Bèta project, genaamd: "VWO & Exact Plus". Dit is een project waarbij leerlingen al vanaf de brugklas vakoverschrijdend onderwijs krijgen in de beta-vakken, bij voorkeur in samenwerking met bedrijven en kennisinstellingen. Dit project is in het schooljaar 2005-2006 van start gegaan in de brugklas, en draait nu dus in het 1^e en 2^e leerjaar van het VWO. Van 15:00 uur tot 17:15 uur hebben de leerlingen die in dit project meedraaien een masterclass "Cryptography and the Enigma" gevolgd.

Deelnemende groep

Process Technology (Doyle)

Connectivity Signals & Networks (Cosine) 865410

Dee Denteneer
Evgeny Verbitskiy
Henk Hollmann

Event:

Summary: Jet-Net master class "Cryptography and the Enigma"

Date: afternoon May 9, 2007

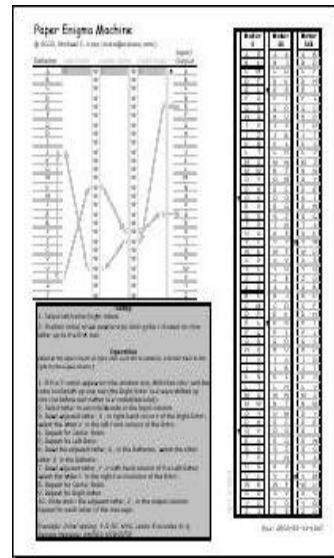
Hosted by: Cosine group (Dee Denteneer) in cooperation with the mathematics cluster of the DSP (Henk Hollmann and Evgeny Verbitskiy).

Guests: First and second grade high school students from St. Joris College (Eindhoven) following a special track on mathematics.

The master class is one of a series of master classes, in which we receive young students from the St. Joris college that have a special interest in mathematics (the VWO beta plus project). The school organises for them a series of events outside of the regular curriculum. For this purpose, the children meet approximately once every month. One or two of these meetings are organised with the help of Jet-Net and Philips Research. The other meetings are at school and organised by the teachers.

Because of their age, their background in mathematics is still weak and they cannot be exposed to too much formal mathematics.

In the current meeting, we looked at cryptography: coding and first via one alphabetic and then via poly-alphabetic principles decoding (the slides are included as a separate attachment). There was just a little time spent on plenary presentation, and the major part of the meeting was devoted to exercises. Again, in this part, the children were engaged most of the time in the construction of a paper version of the famous enigma machine. The enigma machine is an encoding/decoding machine that was used by the German army during the second world war. It was deciphered at Bletchley Park, by means of the works of the famous English mathematician Alain Turing, and this is told to be one of the decisive events in this second world war.



The construction was with scissors and glue, and was good fun according to the children. We used a paper version of the enigma. A crude version of this can be found on the internet (see the figure above and the site that can be found at <http://mckoss.com/Crypto/Paper%20Enigma.pdf>). However, we used a much nicer version, enhanced with the help of Henny Herps. See the photograph below, with the schoolchildren, showing the results of their work. Then we made some exercises with it, encoding and decoding names, and verified the results with a computer simulation of the enigma (that can be found at <http://users.telenet.be/d.rijmenants/en/enigmasim.htm>).

We concluded the entertaining afternoon with some exercises on public key cryptography.



Zou je later bij Philips willen werken?

Ja 25%

- Ik vind exacte vakken leuk dus word ik misschien wel ingenieur
- Het lijkt me leuk en interessant

Nee 63%

- Ik wil een ander beroep doen
- Ik weet nog helemaal niet wat ik wil worden

Misschien 12%

- Ik wil iets met wiskunde doen, maar daarmee kan ik ook bij andere bedrijven terecht

Totaal indruk / gem. eindcijfer: 8.4

Docenten: **8.0**