

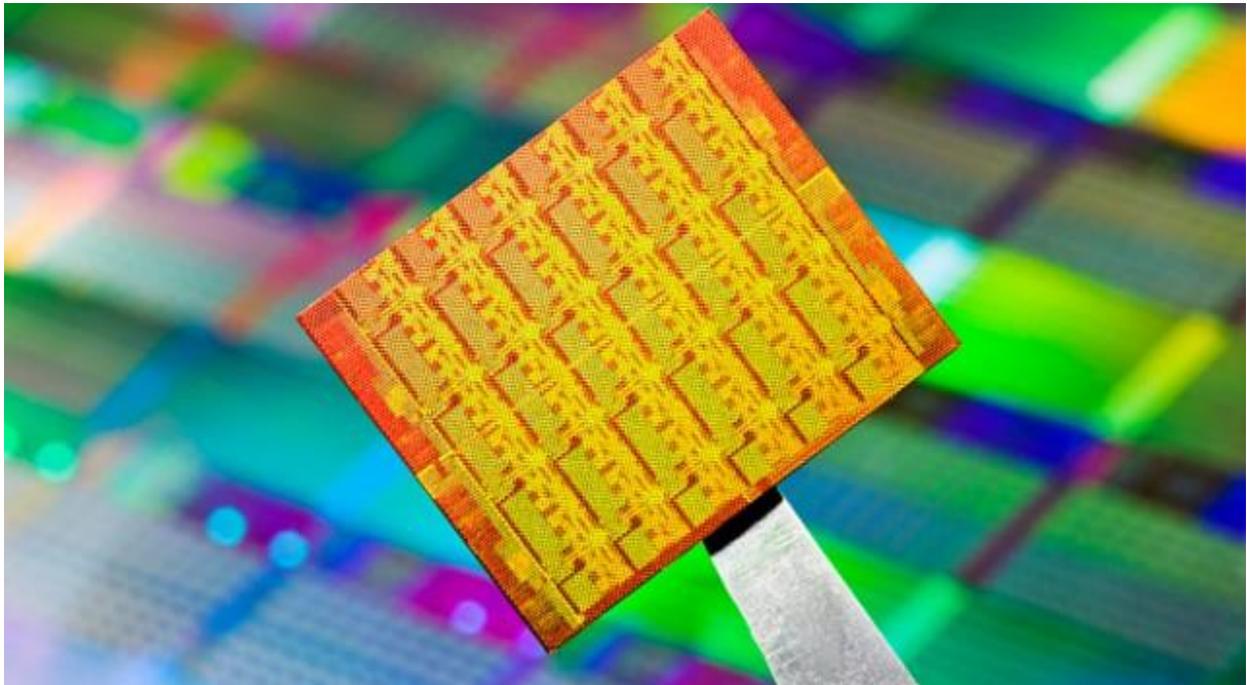
MATH PROJECT



BY DAVID HURLEY

WHY MATHS IS IMPORTANT IN THE HISTORY OF THIS JOB

Tyndall is a scientific research institute based in Cork. My dad is a research scientist there and he says without math his job would not exist. In Scientific research the use of equations, measurements and quantities is key, in other words, if math didn't exist chemistry and physics wouldn't either. Imagine trying to make new medicine, without math what would you measure the amount of each ingredient with. Imagine trying to build computer components, (one of Tyndall's main areas of research) it would be impossible as they are at a microscopic level. Without math, there would be no reason for Tyndall to exist.



Silicon wafer made at Tyndall

QUALIFICATIONS NEEDED FOR A JOB IN **TYNDALL**

It depends what area of Tyndall you work in what qualifications you need. For example there is an accounting department and an I.T. department. However for the most part you need a PHD, math, chemistry, physics, or biology if you are working in scientific research. In all these subjects higher level leaving cert honors are required.

THE USE OF MATH IN EVERYDAY LIFE IN **TYNDALL**

My dad works as the head of a research group where he chooses an area to research. At the moment he is working on splitting hydrogen and oxygen efficiently using solar energy so to use the hydrogen as a source of clean energy. Sometimes his projects involve a lot of math for example when demonstrating physics concepts. However most of the time he times he uses math indirectly like the use of numbers to quantify data.

It really depends what group you are working with in Tyndall, one of my dad's co-workers, Brendan, uses complicated math everyday as he is working with machines that need to be programmed to carry out certain tasks and he also measures the qualities of electrical devices.

While doing work experience in Tyndall Brendan showed me his lab and the equipment he works with. There I really did get a taste for why you need to be great at math for this job.

WHAT ARE TYNDALL'S SERVICES AND PRODUCTS

Tyndall is mainly involved in making semiconductors for new computer chips. In 2012 they were the first to make a new type of semiconductor which is smaller and makes the devices more powerful which are now being used by Intel. It also takes on PHD students from UCC and other universities. At the moment 130 of 450 employees are PHD students.

THERE MAIN PARTNERS

Companies that fund research in Tyndall include Intel, IBM, Analog devices and other electronics companies. They are however very closely linked with Intel and more or less work as Intel Irelands main research centre.

ADVANTAGES AND DISADVANTAGES OF THE JOB

According to my dad, the advantages are the job is very interesting and challenging. He says that it tests your brain power and creativity on most days. Also, if you're good at your job, you get to go on work trips all over the world to give presentations to companies and other research institutes. This job has taken him a lot of places from Dublin to France to America countless times.

The disadvantages are long hours, as the head of a group my dad's typical day is 9am - 7:30pm. It is to my understanding it is like this for all UCC head positions. It also involves a lot of checking e-mails, typically 200-300 important ones a week. This usually means he has to spend a few hours each weekend reading and responding to e-mails.

IMPORTANT QUALITIES FOR THE JOB

The most important qualities are curiosity, teamwork, natural talent and perseverance. Curiosity, to seek new projects to work on. Teamwork, you don't work alone you work with a team and you need to learn how to work with your team efficiently. Natural talent, you need to be naturally smart, good at math and science. Perseverance, as it is research and may lead nowhere but you have to stick with it.

HOW IMPORTANT IS MATH TO TYNDALL

OVERALL

In Tyndall, apart from research science math is very important. In the accounting department they deal with incoming grant and general expenses, math is very important here. They have an IT department which uses math for programming. They are also still adding finishing touches to an extension so the architects use math, and many other uses

OVERALL COMMENT

To get a job in Tyndall being great at math is extremely important no matter what department you work in. For me, Tyndall shows how important math is and after spending a week of work experience there I get a sense of how important it is in this profession.

