



Sentinus

Science Technology Engineering Mathematics



Sentinus Programmes

Sentinus runs a very wide range of STEM programmes, but also aims to provide flexibility for schools to meet your particular needs. We have many years' experience of developing new programmes and tailoring existing programmes to suit the needs of individual schools. If you have a particular curriculum need, or want to incorporate science and technology into a theme or topic, please contact us to discuss your requirements.

Programmes for Primary Schools

Junior Industry Challenge

Target Group: Years 1 – 7

Numbers: Selected pupils, selected class or classes

Duration: 1 month – 5 months

Project work based on a visit to a local company, where pupils look at various aspects of the business. On return to school they develop a cross-curricular project based on the business at Bronze, Silver or Gold Level as desired and can include workbooks, exhibition materials, models of product, development of a mini-enterprise and their own products. Gold Level projects are invited to attend a Final Exhibition at Sentinus Young Innovators.

Primary Construction Challenge

Target Group: Years 5 – 7

Numbers: Teams of two pupils

Duration: Half Day

The Primary Construction Challenge is a design and build problem-solving activity for primary schools using K'Nex construction kits. Working in pairs, the pupils are asked to design and build a solution to a "challenge" and their finished models are judged by Sentinus Ambassadors. From a series of regional heats 25 teams are selected to compete in the Northern Ireland Final at Sentinus Young Innovators.

Primary STEM Challenge

Target Group: Years 6 - 7

Numbers: Class, with selected teams competing in heats

Duration: Half Day

Problem solving challenge for teams of three P6/ P7 pupils. Using basic technology materials, teams are required to design and build a solution to a given problem within a set time. Heats take place throughout Northern Ireland, with 25 teams being selected to compete in the Final at Sentinus Young Innovators.

A comprehensive resource booklet is available on Sentinus website to support the teaching of technology.



Tasty Science

Target Group: Years 5 – 7

Numbers: 60 – 80

Duration: 4 – 12 Weeks

Tasty Science encourages children to explore the food we eat and how it gets to our plates. Starting off with a half day session of practical investigations looking at content and nutritional value of food stuffs, followed by a period of teacher led project work during which pupils carry out practical activity around the theme of food production.

Primary Robotics Roadshows

Target Group: Years 5 – 7

Numbers: 50 – 60

Duration: Half Day – Full Day

This programme introduces pupils to computer programming, using either drag and drop or PBASIC. Set within the context of space exploration, pupils work in pairs to programme their own autonomous vehicle to carry out a range of tasks. Pupils learn to write their own programmes and download these to their robot to enable it to carry out its tasks.

Extended Schools Activities

Target Group: Years 1 – 7

Numbers: 40 - 100

Duration: 1 - 4 Hours

If your school has access to Extended Schools funding, Sentinus can provide STEM activities to support links with the community. These are an ideal mechanism for engaging with the local community and raising the profile of your school. Activities can be themed to link with locally important topics or to support classroom learning.

Family STEM Days

Target Group: Years 4 - 7

Numbers: 40 - 100

Duration: 1 Day

Family STEM Days provide an opportunity for schools to provide activities at weekends, or in the evenings, designed to engage both parents and young people in hands on STEM activities. Content can be themed to support topics being taught in curriculum time.

Primary STEM Roadshows

Target Group: Years 5 – 7

Numbers: 60 – 80

Duration: Half Day – Full Day

These one day programmes engage up to 80 Key Stage 2 pupils in interactive problem solving activities focusing on science, technology and maths, which can be tailored to a chosen theme. Participants work in teams of three to solve a series of problem solving challenges, usually supported by trained sixth form mentors. A wide range of activities available, designed to illustrate science and engineering in a real world context.

Medics in Primary Schools

Target Group: Years 4 – 7

Numbers: Whole Class

Duration: 8 – 10 Weeks

The Medics in Primary Schools (MIPS) programme is a joint Queen's University - Sentinus activity which brings student doctors into the classroom over a period of 8 – 10 weeks to teach science. Topics covered include healthy skin, healthy heart and lungs, healthy brain and healthy body. The medical students bring science to life for pupils through practical activities, demonstrations and the use of medical equipment.



F1 in Primary Schools

Target Group: Years 4 – 7

Numbers: Teams of 6 or Whole Class

(in teams of 6)

Duration: 8 – 10 Weeks

The F1 in Primary Schools is a competition for primary schools which requires pupils work in teams of six to design and manufacture CO₂ powered model racing cars which are raced on a 25 metre track. The first stage is to design and produce a clay model of their car, from which Sentinus manufactures a balsa wood model.

The model is returned to the school for sanding, painting and finishing, including the fitting of axles and wheels, painting and branding. Teams develop a design portfolio, visual display and verbal presentation in preparation for the Northern Regional Final.

Sentinus Young Innovators

Target Group: Years 4 – 7

Numbers: Whole Class

Duration: 1 Day

Sentinus Young Innovators, incorporating the Big Bang Northern Ireland, is one of the largest events of its kind in the UK, celebrating the achievements of young people in STEM. At its centre is an exhibition of innovative and exciting project work carried out by students from schools throughout Ireland, and a range of interactive challenges for primary school pupils.

The event aims to promote interest and engagement in the STEM subjects, for all age groups. Schools can register to attend free workshops and shows covering a wide range of subjects, including pyrotechnics, robotics, engineering superheroes, flight, engineering the future and the STEM Module. In addition there is a range of 30 interactive stands provided by local companies, universities and public sector bodies, demonstrating the use of science and engineering in the workplace.

Smart Energy

Target Group: Years 5 – 7

Numbers: Whole Class

Duration: 8 – 10 Weeks

The Smart Energy programme brings trained Sentinus Ambassadors from engineering into the primary classroom to deliver structured programmes of science and technology activities over a period of up to ten weeks, focusing on renewable energy technologies. This is followed by the development of project displays in preparation for a Celebration Day.

Programmes for Post Primary Schools

Big Bang Inspire Me Days

Target Group: Years 8 – 10

Numbers: Selected pupils, selected classes, year group

Duration: 1 Day

STEM challenge days for up to 60 Key Stage 3 pupils at a time. Pupils work in teams of two or three to solve a range of practical STEM challenges, in the areas of computer science, engineering, food science, maths and physics. The winning team from each event will be invited to attend a Regional Final at Big Bang Northern Ireland.

Big Bang @ School Events

Target Group: Years 8 – 14

Numbers: Selected pupils, selected classes, year group

Duration: 1 Day

One day events designed to encourage schools to hold internal science fairs to give pupils the opportunity to display science and technology project work in a competitive environment. Sentinus offers support for the events by providing stimulus for projects, running interactive hands on STEM workshops, advice on organisation and running of the day and providing careers literature.



Big Bang Near Me Events

Target Group: Years 8 - 14

Numbers: Selected pupils, class, year group.

Duration: 1 Day

A number of locally based, high profile, Big Bang events celebrating STEM project work and providing a public forum in which students can exhibit their projects. Each event comprises project displays, interactive STEM workshops, science shows and interactive stands. Competing students will have the opportunity to win direct entry to represent Northern Ireland at the UK Big Bang Fair.

Big Bang Northern Ireland

Target Group: Years 8 – 14

Numbers: Selected pupils, selected class or classes

Duration: 1 Day

The Big Bang Northern Ireland takes place in June each year as part of Sentinus Young Innovators, comprising a range of competitions, STEM workshops, shows and interactive stands. This is one of the biggest regional events in the UK and competitors have the opportunity to compete for places to represent Northern Ireland at national and international competitions.

STEM Roadshows/Masterclasses

Target Group: Years 8 – 14

Numbers: 40 – 60

Duration: Half Day – Full Day

One day events engaging young people in hands on STEM activities designed to raise the profile of the subjects. Pupils work in pairs to complete a number of problem solving activities which cover a range of topics and can be tailored to suit the needs of each school.

Digital Futures

Target Group: Years 8 – 12

Numbers: 60 – 80

Duration: 8 - 10 Weeks

Introducing young people to computer coding within a business context. Students investigate how digital technologies can be used to address business needs or solve a workplace problem. They develop an app for presentation at a celebration day at Belfast City Hall. Winners travel to Silicon Valley for five days to visit some of the world's most successful technology companies.

Robotics Roadshows

Target Group: Years 8 – 12

Numbers: 60 – 80

Duration: Half Day – Full Day

Introduction to computer programming, using drag and drop or PBASIC. Set within the context of space exploration, pupils work in pairs to learn to write and download their own programmes to autonomous vehicles to carry out a range of tasks.

Apply IT

Target Group: Years 8 – 12

Numbers: 60 – 80

Duration: Half Day – Full Day

An introduction to app building using Google's App Inventor software. Students learn how to design, build and test an app and how to download it to a smart phone or tablet. By the end of the day they will have their own app to take away.

Family STEM Days

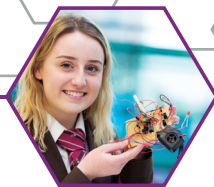
Target Group: Years 4 – 7

Numbers: 40 - 100

Duration: Half Day – Full Day

Family STEM Days provide an opportunity for schools to provide activities at weekends, or in the evenings, designed to engage both parents and young people in hands on STEM activities. Content can be themed to support topics being taught in curriculum time.





Extended/After Schools Activities

Target Group: Years 8 – 10

Numbers: 40 - 100

Duration: 1 - 4 Hours

If your school has access to Extended Schools funding, Sentinus can provide STEM activities to support links with the community. These are an ideal mechanism for engaging with the local community and raising the profile of your school. Activities can be themed to link with locally important topics or to support classroom learning.

STEM Careers Roadshows

Target Group: Years 8 – 10

Numbers: 40 - 60

Duration: Half Day – Full Day

STEM Careers Days combine a range of effective practical problem solving STEM activities with presentations for role models from industry to highlight the value of the STEM subjects and the career opportunities available in the sector.

Experiences of Work

Target Group: Years 8 – 10

Numbers: Whole Year Group

Duration: 2 Hours

Experiences of Work brings role models from STEM occupations into the classroom to relate their career experiences and influences to young people. Covers a range of STEM sectors and qualification levels and can be tailored to suit the needs of each school.

STEM Design Challenge

Target Group: Years 8 – 10

Numbers: Whole Class or Selected Pupils

Duration: 2 – 3 Months

This is an extended project linking schools with an engineer to complete a project focusing on future scapes. Students are asked to design their city or building of the future, considering water usage, energy usage, clean technologies, transport and communication. Teams can build a virtual city in Minecraft. Concludes with a celebration day.

F1 in Schools

Target Group: Years 8 – 14

Numbers: Whole Class or Selected Pupils

Duration: 2 – 6 Months

F1 in Schools is an international competition which challenges young people to design and build a model of a Formula 1 car, project portfolio, visual display and verbal presentation. Finished cars are powered by compressed CO2 and raced on a 25m track. Concludes with a celebration day when teams compete to represent Northern Ireland at the national finals.

Engineering Futures

Target Group: Years 8 – 10

Numbers: Whole Class

Duration: 8 – 10 Weeks

Engineering Futures links schools with undergraduates engineers, from a range of disciplines, to research potential problems faced by engineers in the future. Working with the undergraduates, pupils propose suggested solutions to these problems and examine emerging technologies. Programme concludes with a celebration day.



Nuffield Research Placements

Target Group: Year 13

Numbers: By Application

Duration: 4 – 6 Weeks

Nuffield Research Placements give students the opportunity to experience real research and development projects, hosted by local companies and organisations. Following an induction day when they meet their project providers, students take up a placement and play an active role in a research project. Concludes with a celebration day when they display a poster on their research.

Team R&D

Target Group: Year 13

Numbers: Teams of 3 - 5

Duration: 6 Months

A structured programme linking teams of 3 – 5 AS level students with a local company to work on a live engineering project. Teams work closely with a link engineer to develop a solution to the problem through site visits, in school work and a residential at university. Concludes with a celebration day when projects are evaluated by teams of expert assessors.

Employability Skills

Target Group: Years 9 - 14

Numbers: Year Group

Duration: Half Day – Full Day

Sentinus offers a suite of employability programmes for young people covering, interview skills, career planning, learning skills and personal effectiveness. Each of these can be tailored to suit the needs of students at a local level and can be delivered in either a half-day or full day format.

Sentinus Young Innovators

Target Group: Years 4 – 7

Numbers: Whole Class/Year Group

Duration: 1 Day

Sentinus Young Innovators, incorporating the Big Bang Northern Ireland, is one of the largest events of its kind in the UK, celebrating the achievements of young people in STEM. At its centre is an exhibition of innovative and exciting project work carried out by students from schools throughout Ireland, and a range of interactive challenges for primary school pupils. The event aims to promote interest and engagement in the STEM subjects, for all age groups. Schools can register to attend free workshops and shows covering a wide range of subjects, including pyrotechnics, robotics, engineering superheroes, flight, engineering the future and the STEM Module. In addition there is a range of 30 interactive stands provided by local companies, universities and public sector bodies, demonstrating the use of science and engineering in the workplace.

CREST Awards

Target Group: Years 8 – 14

Numbers: Individual, Whole Class, Year Group

Duration: 1 Day – 6 Months

CREST is a national accreditation programme for science and technology project work. Many of Sentinus' programmes are accredited using the Awards at Discovery, Bronze, Silver or Gold levels. In addition schools can register to have course work or project work accredited using the scheme. The process is straightforward and Sentinus covers the cost of the awards.



"What a pleasure to have you in school with the Year 5 - 7 classes this week. The children did find the work challenging but enjoyable. We have featured the work on our website and the local press. I feel from the staff the length and format of the sessions were just right and helpful to all. Please include us on any future list for visit, thank you for including us this time around."

**Roy McClelland, Principal
Kells and Connor Primary School**

"I just wanted to thank you again for travelling to St. Ciaran's, Ballygawley and delivering the Digital Futures Roadshow. The students really enjoyed the day and got so much out of it.

The winners who will compete at the Celebration Event were at my classroom door first thing this morning to pick up from where they left off yesterday... they were so enthusiastic about it all and some had even looked at google app inventor last night. Thanks again so much for everything."



**Michelle Donnelly, HoD ICT
St Ciaran's College**



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