#SAISWeek



STEM AMBASSADORS IN SCOTLAND

31 January - 6 February 2022

PRACTITIONERS HANDBOOK

INTRODUCTION

STEM Ambassador in Scotland Week 2022 (31 Jan to 6 Feb) is a celebration of all things STEM Ambassador! This includes the opportunity to work with STEM Ambassadors through our Careers Carnival sessions, partner/STEM Ambassador workshops, blogs and other resources. During the week STEM Ambassadors will cover a range of topics from careers and skills to innovation in Scotland.

This celebratory week links with:

- Career Education Standards: It sets out what children and young people will learn and what parents/carers, teachers/practitioners, employers and Skills Development Scotland will do to support their learning. Implementation of the standard will improve the quality and consistency of learning about work and careers.
- Scottish Education Curriculum for example, Topical Science
 - Third level SCN 3-20a: I have collaborated with others to find and present information on how scientists from Scotland and beyond have contributed to innovative research and development.
 - Fourth level SCN 4-20a: I have researched new developments in science and can explain how their current or future applications might impact modern life.
- **Learning for Sustainability**: Promoting careers in Science and its potential impact on the wider world supports conversations around global citizenship, sustainability and equitable societies.
- **GTCS Professional Standards**: 3.1.3 Effectively utilise partnerships for learning and wellbeing (example, develop partnerships which connect relevance of learning to skills for life, learning and work).
- Young STEM Leader Award:
 - Non-formal programme: Engaging with inspirational role models in STEM is a useful way to explore the Discover and Inspire badges for YSL2, YSL3 and YSL4. Particularly the themes of inspirational role models, stereotypes, opportunities, pathways and futures and STEM in Scotland.
 - Formal programme: STEM Ambassadors can provide input to leadership skills, qualities and behaviours; health and safety, and the specific themes of each level.

This handbook has been pulled together to help you plan for STEM Ambassador in Scotland Week (SAIS Week) and to give you time to consider how to link STEM Ambassadors into your lessons.

CONTENTS

EVENTS

	SAIS Week Information Session	4
	Careers Carnival	4
Н	OW TO:	
	Practitioner Activity Cards	9
OI	FFERS	
	From STEM Employers and Partners	11
	From STEM Ambassadors	17
RE	SOURCES	
	Case Study Blogs	19
	Scottish Researcher Blogs	20
	Spotlight Profiles	22
	SSERC PL Courses and Resources	22
M	ORE!	
	STEM Ambassador Passport	23
	Social Media	23
	Registration	23

SAIS WEEK INFORMATION SESSION (FOR PRACTITIONERS)

Monday 24 January 2022, 4.30pm

Would you like to find out more about SAIS Week? Join us for a short information session that will highlight what is available and give you tips on how to use them in your classroom.

Register

CAREERS CARNIVAL (P6 TO S6)

During SAIS Week (weekdays only) we will be running a range of online Careers Carnivals focusing on a number of STEM sectors, each involving a number of STEM Ambassadors. They will talk about their experiences, career pathway and challenges along the way and have time to answer your questions. Pupils and practitioners are invited to join these online sessions and all of the sessions will also be available on our YouTube channel.

Tech and Digital, Mon 31 Jan, 12noon-1pm (tbc)



Kirsty Pryer

I run an ISP business based in Cromarty. I joined the company straight after college in 1998, just as people were starting to use the internet and email. My role primarily involves setting up new customer accounts, customer support on our technical helpdesk plus managing our social media.



Dave Craig

I'm an engineer specializing in software for audio and video devices. I grew up in a small village in Aberdeenshire, and for the last 25 years I have worked with colleagues in California writing software that runs inside equipment for recording studios, MP3 players and TV set top boxes.

Tech and Digital (continued)



Laura Braid

I'm a Staff Supplier Quality Engineer at LifeScan, providing technology solutions for people with Diabetes. I work with the suppliers who provide products, software and services. I help suppliers troubleshoot problems, help them with engineering input into projects and meet applicable regulations.



Caroline Laurenson

I am the Managing Director of TL Tech Smart Home Solutions. I am a Chemical Engineer and Project Manager by background and a Fellow of the IChemE. In 2020 TL Tech launched Kindspace, a voice application for Amazon Alexa that supports wellbeing.

Forestry, Tues 1 Feb, 2-3pm (tbc)



Coll Williamson

I am a Geo-environmental engineer with 3 years' experience in an environmental consultancy. I work in an office and out in the field, carrying out ground investigation work to assess land quality and contamination. This helps to assess the suitability of the land for developments such as roads or buildings.



Julian Hollingdale

I am Tilhill's dedicated certification manager and lead a team of forest managers across the country to ensure that forests reach a required standard. I graduated from Bangor University with a BSc Forestry in 2000 and have worked in Forest Management for over 20 years.

Construction, Wed 2 Feb, 3.30-4.30pm (tbc)



Ashley McCurry

I live and work in Aviemore. I am a Graduate Quantity Surveyor for McGowan Environmental Engineering Ltd. Currently in my Honours year at Robert Gordon University undertaking a Graduate Apprenticeship in Construction and the Built Environment allowing me to work and study at the same time.



Ross O'Brien

I was first exposed to the Industry during a student placement with Tayside Contracts, I learnt the skill of quantifying projects. Within the last 6 years as an Engineer with BEAR Scotland, I have led a team to take on a wide variety of highway maintenance projects within the North West of Scotland.



Dean Carrick

I am a Chartered Quantity Surveyor, a consultant to the Construction industry. Prior to this I have also been in the Army and have been a Photogrammetrist (map-maker). I am currently focused on School Building projects with a particular focus on sustainability and the learning environment.



Harry Weld-Forester

I am currently Engineering Manager at Binnies- managing the design of sewage works. I am a chartered Civil Engineer and over 15 years of experience. I have been project manager and CEO in the charity sector working in Zambia and Tanzania - in relief and development work in rural areas and refugee camps.

Renewable Energy, Thurs 3 Feb, 4-5pm (tbc)



Gordon Black

My first career was with British Telecom (24 years), then three years working freelance with tech start-ups in Scotland. My second and current career is in hydropower, where I cofounded a small business. I am also a director of two other small businesses!



Lorna Bennet

I am a Project Engineer working on both research and design projects in exciting projects in wind, wave and tidal power. I work with project partners to address industry challenges; leading projects in energy transition to transform the energy sector, accelerating our transition to net-zero.



Tosin Somorin

I work at the Department of Chemical and Process Engineering at the University of Strathclyde. As part of my day-to-day job, I teach Environmental Engineering and research aspects of waste management, pollution prevention and clean energy development.





Anne Keitel

I am a Lecturer in Psychology at the University of Dundee. That means I do research and I also teach students. My research is about how our brain works. I try to find out what happens in our brain when we listen to music or to someone else talking.

Research (continued)



Salma Abuznada

My name is Salma, and I'm a 3rd year PhD student at the University of Glasgow. My research focuses on childhood obesity. I cover different aspects of obesity, from children and adolescents understanding of obesity, food and nutrition to weight stigma children and adolescents face.



Caroline Haig

I'm Caroline, and I'm a Biostatistician: I do medical research. I work closely with other researchers and doctors to test new treatments, or try to find out what might cause things such as heart attacks. It's very rewarding and it is my dream career!

Taking part in the careers carnival can be a great way for Young STEM Leaders to get inspired by role models in STEM, helping to generate evidence for their Log. After the live sessions, YSLs could use the recordings as resources to lead their own STEM activities, events or interactions, or they may wish to use the same format to run events in their centres.



PRACTITIONER ACTIVITY CARDS

SAIS Week is the perfect opportunity to place a request for a STEM Ambassador to work with your class or school. It's simple to get started, if you haven't already got an account you need to register on the <u>STEM Learning website</u> then you can add an activity. We have created a guide to help you write an activity which you can find <u>here</u>.

We've also provided some sample text you can simply copy and paste into the new activity form and just fill in the blanks.

Careers Talk

Title

[SECTOR] Careers talk at [SCHOOL NAME] in [LOCATION]

Engineering Careers talk at Secondary Academy in Glasgow
We are looking for a STEM Ambassador who [SECTOR DETAILS] to talk to our pupils about their career to date and what's involved in their day-to-day job.
The presentation should be around [INSERT TIME] with time for questions after. We'd like this talk to be [IN PERSON/ONLINE] and take place [INSERT IDEAL DATES & TIMES].

Add information about your pupils, age, interests, and knowledge so far Include any specific aims you want to achieve: e.g. 'we would like our pupils to have an understanding of civil engineering.' Include anything else the STEM Ambassador might need to know before volunteering.

Subject Talk

Title

[SUBJECT] talk at [SCHOOL NAME] in [LOCATION]

Renewable Energy talk at Primary School in Glasgow

We are looking for a STEM Ambassador who knows about [SUBJECT] to talk to
our pupils about this is more detail. The presentation should be around
[INSERT TIME] with time for questions after. We'd like this talk to be [IN
PERSON/ONLINE] and take place [INSERT IDEAL DATES & TIMES]. Our pupils
have been learning about [SUBJECT] in class and would like to hear from
someone first-hand. Some questions we'd like a STEM Ambassador to answer
include [INSERT QUESTIONS]

Add information about your pupils, age, interests, and knowledge so far Include any specific aims you want to achieve: e.g. 'we would like our pupils to have an understanding of civil engineering.' Include anything else the STEM Ambassador might need to know before volunteering.

Activity

Title

Deliver [ACTIVITY] at [SCHOOL NAME] in [LOCATION]

Deliver a coding workshop at Primary School in Glasgow
We are looking for a STEM Ambassador to deliver [ACTIVITY] to our pupils. The
session should be around [INSERT TIME] in length. This will take place in our
school [ADD ANY INFO NEEDED TO ATTEND THE SCHOOL] and take place
[INSERT IDEAL DATES & TIMES]. Our pupils have been learning about
[SUBJECT] in class and would like to hear from someone first-hand. Some
things we'd like a STEM Ambassador to demonstrate include [INSERT LIST]

Add information about your pupils, age, interests, and knowledge so far Include any specific aims you want to achieve: e.g. 'we would like our pupils to have an understanding of civil engineering.' Include anything else the STEM Ambassador might need to know before volunteering.

PARTNER OPPORTUNITIES (NURSERY TO S6)

STEM Employers and Organisation from across Scotland have shared details of workshops and resources they can share with you and your classes/groups. Have a look through the opportunities below? Can you include any of these in your plans for next term?

Lighting up the Curriculum for Excellence

Edinburgh Laser Optics Ltd.

Teacher CPD

The workshop involves training teachers to solder enabling them to build three types of circuit in the Starter kits. Lighting Up starter kits are available for any primary school in Midlothian and we hope to have top-up kits available for previously participating schools too. This workshop would be held at Edinburgh Laser Optics in Penicuik and could be after school.

For: Primary Teachers

When: 31 Jan to 31 Mar 2022

Where: Midlothian

How to access this opportuntiy:

Email: kmhill@scotnet.co.uk

STEM on a shoestring (English and Gaelic)

University of Strathclyde

Resource

Introduce the science behind optical medical imaging to primary school students, using simple household resources.

When: Resource permanently available.

For: Nursery to P7
Where: Anywhere

How to access this opportunity:

<u>Cyanotype printing (English)</u>

Blueprinting (Gaelic)

Catching Rainbows (English)

Catching Rainbows (Gaelic)

Pepper's Hologram (English)

Pepper's Hologram (Gaelic)

Smarty Sort (English)

Smarty Sort (Gaelic)

Workshop available on request: Kirsty.Ross@strath.ac.uk

Science Club Podcast: A Getting Better Together Podcast

University of St Andrews

Resource

The Science Club Podcast is created by children from the Fortissat Science Alliance, based at the community organisation Getting Better Together Shotts. The children interview researchers from all over the world! Supported by the Wellcome Trust and Children in Need.

For: Any children interested in STEM careers.

When: PermanentlyWhere: Anywhere

How to access this opportuntiy:

Access the resource here.

U.S.S. Alba

University of Strathclyde

Resource/CLPL

There's been a theft on the U.S.S. Alba, Scotland's space station on the Moon. We need your help to investigate the crime!

For: Nursery to P7

When: Resource permanently available.

Where: Anywhere

How to access this opportunity:

How To video for the 3-4 U.S.S. Alba lessons can be accessed here.

Training available on request: Kirsty.Ross@strath.ac.uk

CLPL resource permanently available. Email Kirsty.Ross@strath.ac.uk for support in building your own kit box.

The World of Aviation

Royal Aeronautical Society Prestwick Branch

Workshop/Presentation

Everything you need to know about how airplanes and helicopters work, including but not limited to: - Physics of Flight; Aircraft Navigation; Weight and Balance; Aircraft Operation; Power of Flight; The Atmosphere; How Helicopters Fly; Coping with Instability; Helicopter Controls; Careers in Aviation.

For: Any school, any age.

When: **Anytime** Where: Anywhere

Atkins

How to access this opportunity:

This link allows to request a virtual or in person visit from one of our aerospace professionals:.

GIS for budding Geographers, Scientists, & **Engineers**

Workshop/Presentation

Geographic information systems (GIS) is a core part of many careers in the engineering, design, planning, environmental and digital sectors. Students who want to be civil engineers, ecologists, archaeologists, drone pilots, computer scientists and many more will all need GIS. Free software is available which is quick and easy to get your students started with, at all ages. I will cover some of the basics, explain how careers use the technology for spatial statistics, and provide some lesson plans to help get started.

For: For geography / science / maths teachers

When: Class times 31st Jan to 28th Feb

Where: Anywhere

How to access this opportuntiy:

Email elspeth.mcintyre@atkinsglobal.com to ask about setting up a workshop.

Get started with GIS

Atkins

Workshop/Presentation

A workshop of the careers in geography and, if possible, an interactive chance for students to create their own GIS app using free online software.

For: For geography students in first half of secondary school.

When: Class times 31st Jan to 28th Feb

Where: Anywhere

How to access this opportuntiy:

<u>Email elspeth.mcintyre@atkinsglobal.com to ask about setting up a workshop.</u>

Gross Out GIS

Atkins

Workshop/Presentation

A workshop on 'gross out' gis where they can then do a practical exercise with their teachers to explore their playground and capture gis data on a map.

For: Primary students

When: Class times 31st Jan to 28th Feb

Where: Anywhere

How to access this opportunity:

Email elspeth.mcintyre@atkinsglobal.com to ask about setting up a workshop.

Using Spatial Data Science for Higher GeographersAtkins

Workshop/Presentation

An intro to some of the more in depth spatial data collection, analysis and visualisation that they may wish to use as part of their capstone projects.

For: Geography students in their final years of school

When: Class times 31st Jan to 28th Feb

Where: Anywhere

How to access this opportuntiy:

Email elspeth.mcintyre@atkinsglobal.com to ask about setting up a workshop.

Butterfly Effect

Jacobs

Resource

The Butterfly Effect is a program designed to create lasting behaviour change and habit formation by providing pupils with the knowledge and understanding they need to put sustainability at the heart of every decision they make as the consumers of the future. The programme covers 8 themes, all linked to the UN Sustainable Development Goals; Water, Waste, Plastic, Food, Carbon, Biodiversity, Jobs of the Future and Human Rights and Lives.

The program works with young people every year, over the course of each of their 7 years at primary school and is available, for free, to schools across the world. Using a "little and often" approach, our online program covers all areas of the curriculum and is intended to be delivered throughout the summer term across the school and over the course of 8 weeks. Our easy to follow, themed and fully digital activities encourage fun learning and teachers can tailor activities to suit different pupil needs. Activities are short and there is only one set activity per week, lasting between 15 minutes and 1 hour.

For: PrimaryWhen: AnytimeWhere: Anywhere

How to access this opportuntiy:

Access this resource <u>here</u>.

Schools wishing to request a mentor can contact globalsteam@jacobs.com

RAF STEM Resources

Royal Air Force

Resource

Multiple activities, free for teachers and parents to download.

For: Primary and Secondary up to age 14.

When: AnytimeWhere: Anywhere

How to access this opportuntiy:

Access this resource here.

STEM AMBASSADORS OFFERS (P1 TO S6)

Looking for some inspiration from STEM Ambassadors? Need help planning a lesson? Have a browse through the STEM Ambassador offers on the website <u>here</u>. In order to access offers (and to request STEM Ambassadors) you will need a profile on the website. Register <u>here</u>.

Highlighted below are some offers that are currently available, click on the link to express interest and start the conversation with the STEM Ambassador.

Marine Mammals Session

Ashleigh Kitchiner

Presentation/Q&A

Session on marine mammals, food chains and sounds at sea. Prerecorded or live.

For: All primary and secondary students & teachers

When: Can be arranged until end June 2022

Where: Throughout Scotland – online or face to face Orkney

How to access this opportuntiy:

Access this opportunity here.

Journey from school to career Q&A lennifer Veitch

Video/Q&A

A 4 min introduction video which allows students of all ages to ask questions and get a follow up by me. I am an International Fluids Engineer from the small town of Girvan.

For: All primary and secondary students
When: Can be arranged until end May 2022

Where: Throughout Scotland – online or face to face near Girvan

How to access this opportuntiy:

Access this opportunity <u>here</u>.

Do I need to be a programmer to work in IT?Sarah Lean

Discussion

Careers advice around IT.

For: From age 7 - 19

When: Can be arranged until January 2024

Where: Online throughout Scotland or face to face near Hamilton

How to access this opportuntiy:

Access this opportunity here.

CASE STUDIES BLOG (FOR PRACTITIONERS AND YOUNG STEM LEADERS)

Some STEM Ambassadors will be sharing their stories of STEM activity during the week – this is a great chance for you or your Young STEM Leaders to learn more about what kind of activities STEM Ambassadors can be involved and how you can plan them. All the blogs will be available on the SAIS Week 2022 webpage. Publication of the blogs will be spread throughout the week.

Here is a sneak peek of who you will hear from:



Catherine Heath

PCR used to test for Covid - online presentation to Higher Students

I am a scientist working in biomedical research at The University of Edinburgh. I studied molecular biology at university, then stayed on to do a PhD. I am currently trying to understand how our cells regulate the amount of energy they produce, to try and treat diseases such as diabetes.



Sylvia Soldatou

Cell block science - delivering science learning to prisoners

I am a Greek-Italian natural products chemist living in Scotland since 2017. I am currently working as a Research Fellow at the Marine Biodiscovery Centre, University of Aberdeen. I am interested in the discovery of new natural products from marine microorganisms which can be used in the biopharmaceutical, agriculture and aquaculture industry to combat pathogenic organisms.



Maryam Gharebaghi
Careers event and video creation

I am a Chartered process engineer currently living in Aberdeen, Scotland. I started my career in petrochemical industry in 2000 in Iran before moving to Cyprus for my Masters and then Leeds to complete a fully-funded PhD. Since 2011 I have worked for Worley.



Michael Wall
Various STEM related activities

As one of ALlenergy's two Education Officers, I deliver activities to raise awareness on STEM opportunities, especially within the project area of Mid Argyll and Kintyre. With over 10 years in the organisation, I am committed to supporting the promotion of STEM in sustainable energy use and renewables technologies.

SCOTTISH RESEARCH BLOG (P6 TO S6)

Scotland is home to some amazing researchers and you will get the chance to hear their story during SAIS Week 2022. This is a great resource to use and share with you students to improve knowledge of current innovation in Scotland and the opportunities that are available. All the blogs will be available on the SAIS Week 2022 webpage. Publication of the blogs will be spread throughout the week.

Here is a sneak peek of who you will hear from:



Emma Wilson

Meta-research and improving how research is done

I am a PhD Researcher at the University of Edinburgh with a background in Neuroscience. My work focuses on using a technique called meta-research to better understand the research process, how experiments are conducted, and how we can make research methods more reliable and transparent.



Elaine Duncan

Type II diabetes, 3D cell model

I am a 1st year PhD student at the University of Glasgow. In my research, I aim to develop new animal-free models of type 2 diabetes which could be used for personalised medicine or drug screening purposes. I have previously worked extensively in the drug discovery industry and I am a passionate STEM Ambassador.



Morag CooperMarine energy devices

After spending over 15 years in IT, I decided to fulfil my lifelong dream to study Engineering. I achieved a first-class BEng (Hons) in Mechanical and Energy Engineering at UHI in 2017 and was accepted to do a PhD at UHI in 2018 in the field of Marine Energy Engineering.



Ane Valera

Eco-friendlier way to produce methacrylate with genetically modified bacteria

I am a Spaniard who came to Scotland by chance. I have always been passionate about science so my studies so far have been related to biochemistry and drug discovery. In my free time I love making plans with my friends, dancing, hiking, and Pilates.



Ella-Louise Handley Bioengineering

I'm a Chemical Engineering graduate from Newcastle University currently undertaking a PhD in Bioengineering at the University of Edinburgh. My research focuses on the development of novel implantable materials for the regeneration of diseased cardiac tissue – I have an additional keen interest in bioreactors!

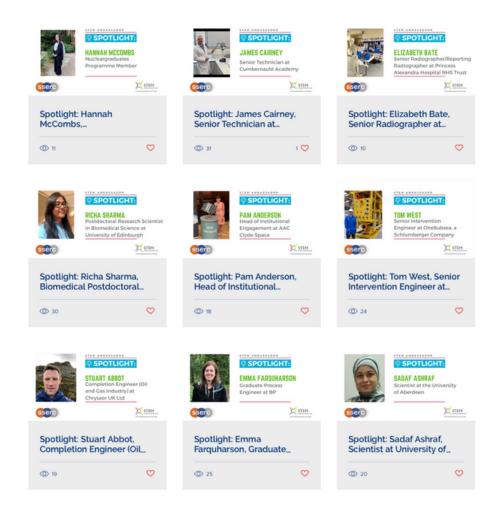
STEM in Scotland is a key theme in YSL4 and local, national and international examples of STEM are embedded within all levels of the Young STEM Leader Programme. YSLs could use these resources to contribute to their own research about inspirational people in STEM in Scotland and beyond.



SPOTLIGHT PROFILES (P6 TO S6)

We will be adding new profiles to our Spotlight resource during the week. Have a browse of our current Spotlights here.





SSERC PL (FOR PRACTITIONERS)

<u>Practical Techniques for Recently Qualified Biologists Pt1 online</u> Thursday 3rd February 2022

,

Safe Use of Fixed Workshop Machinery Refresher

Thursday 3rd February 2022

STEM AMBASSADOR PASSPORT (P1 TO S6)

To make it even more fun and rewarding to engage with our STEM Ambassadors, we've created a new STEM Ambassador Passport. The passport has a grid of different objectives for pupils to achieve. Once they've completed them all, email us at stemambassadors@sserc.scot and we'll send you certificates for your pupils and give them and your school a special shout out on our social media.

You can complete one passport as a class, or each pupil can do it individually.



The passport will be released in January and available on the SAIS Week 2022 webpage. If you have registered your interest in SAIS Week we will also email it to you.

SOCIAL MEDIA

Our social media channels will be busy all week! We will share resources, events and even have a STEM Ambassador Takeover on Twitter.

Follow us on:







Remember, express interest <u>here</u> (if you haven't done so already)