



# 2019 Information Guide



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# STEM in the Pipeline 2019: Information Booklet

## STEM in the Pipeline 2019: Overview

STEM in the Pipeline was developed in 2006 by TechFest in collaboration with Industry Professionals to enable teams of pupils to apply their knowledge of school subjects to a realistic industry project. The project set is a challenging one – to produce a Field Development Plan.

STEM in the Pipeline is in three parts and runs from September to December.

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### **My Oil and Gas mentor is:**

*Please write in the name and contact details for your mentor in this section for reference.*

<b>Name:</b>
<b>Company:</b>
<b>Email Address:</b>
<b>Contact Telephone Number:</b>

## **Part 1: Introduction Day, Wednesday 4<sup>th</sup> September, University of Aberdeen**

This is a full and busy day introducing the teams to the Oil and Gas Industry and the project tasks.

Industry professionals and academics present interactive workshops and talks designed to inform and encourage the student teams throughout the day. The talks cover Geology, Reservoir Engineering & Development, Processing and Finance. The two afternoon workshops centre around applying the geology theory from the presentation to a practical application and also a Project Planning session that allows teams to create a project management plan of action for their project.

There is time set aside for the school teams to meet the industry mentors who can help them during the project..

## **Part 2: Project Work at the School, September to mid-November**

The project consists of three consecutive tasks. Each pupil is expected to be knowledgeable and involved in each task. Overall each team member will spend at least 40 hours on the project, in most cases more.

The project work is on a new scale for the school teams. Teamwork, communication, planning and regular meetings are essential. Research and investigation is necessary before making decisions. Along the way they will receive advice, support, and guidance from their mentor

**Finally a project report is to be written detailing all of their work and results. Three hardcopies and one electronic copy must be submitted to TechFest by the deadline date Wednesday 27<sup>th</sup> November at 4pm. Late entries will not be considered.**

The reports are forwarded by TechFest to the panel of assessors for their appraisal. This leaves the teams a couple of weeks to prepare for Part 3.

## **Part 3: Presentation Day – Wednesday 11<sup>th</sup> December, BP North Sea HQ, Dyce**

This is the opportunity for the teams to give a presentation and display all of their hard work. Each team has a display board and table top space. A group of assessors will visit each team for a brief presentation and interview. Invited guests and industry professionals offer further encouragement and advice to the students with informal discussions. The day concludes with the prize giving ceremony.

## **Key Dates for STEM in the Pipeline 2019**

- **Introduction Day: Wednesday 4<sup>th</sup> September, University of Aberdeen**
- **Project Submission Date: Wednesday 27<sup>th</sup> November, TechFest Office**
- **Presentation Day: Wednesday 11<sup>th</sup> December, BP North Sea Headquarters, Dyce**

## **Introduction Day Overview**

**Date:** Wednesday 4<sup>th</sup> September

**Registration:** 8.45am – 09.00am

**Close:** 3.20pm

**Venue:** Fraser Noble Building, University of Aberdeen

## **Introduction Day Group Allocation**

<b>Group A</b>	Fraserburgh Academy; Robert Gordon's College; Banchory Academy; Bridge of Don Academy; Cults Academy; Oldmachar Academy; Kemnay Academy
<b>Group B</b>	Westhill Academy; Portlethen Academy; Turiff Academy; St Margaret's School for Girls; Aberdeen Grammar School; The Gordon Schools

## **Lectures, Labs and Workshops**

- The day will run in the style of an average University day where the students will receive lectures, a lab and a workshop style session.
- The workshops have been designed and are presented by industry professionals and academics to provide you with the knowledge and understanding that will enable teams to tackle the problem.

## Morning Break and Lunchtime

- After the lunch period students are scheduled to have a meeting with their designated and have the chance to talk informally about the project or ask about working in the oil industry.

## 2019 Introduction Day Timetable

Time	Event		Room
08:45 – 09:00	Sign in and Registration		Lobby
09:00 – 09:05	Welcome & Introduction to Oil & Gas		FN1
09:05 – 10:00	Project Overview		FN1
10:00 – 10:30	Lecture 1: Geology Theory		FN1
10:30 – 10:45	BREAK		
10:45 – 11:05	Lecture 2: Reservoir Engineering and Development		FN1
11:05 – 11:20	Lecture 3: Processing		FN1
11:20 – 11:50	Lecture 4: Finance		FN1
11:50 – 12:30	LUNCH		
12:30 – 12:40	ROOM CHANGE		
12:40 – 13:10	Mentor Meet and Greet		FN3 & FN114
13:10 – 14:10	Geology Practical Group A	Project Planning Session Group B	FN3 & FN114
14:10 – 14:20	ROOM CHANGE		
14:20 – 15:20	Geology Practical Group B	Project Planning Session Group A	FN3 & FN114
	DEPART		

## Project Overview

After pupils have attended the STEM in the Pipeline Introduction Day they are faced with independent project work over the next three months.

The aim of the project is to produce a field development plan for the STEM Oil Field, in the form of a report and poster.

The project consists of three tasks:

- Task I: Interpret all the geophysical and geological data to calculate the total amount of oil in the reservoir, the STOIP (Stock Tank Oil Initially in Place) and the uncertainty range on this volume:
  - a. Using the seismic sections and empty map provided together with the geological information in this task book, you will calculate the STOIP for the STEM oil field
  - b. Research a few inputs into your oil volume calculation that you think carry biggest uncertainty and thus risk. Describe why and how you could reduce this uncertainty and risk.
  - c. Produce a 3D model of your oil field.
- Task II: Using the volume of oil determined in Task I you need to decide how to develop the STEM Oil Field (How many wells you want to drill and what type of production and export facilities you want to use etc). As discussed at the introduction day, financial considerations need to be applied throughout this Task:
  - a. Perform initial calculations of a few options (*Appraise*) and decide on a gross solution (*Concept Select*).
  - b. Research the main processing components that you think you will need in order to separate the crude oil into oil gas and water. Create a process flow diagram and explain your choices.
  - c. Calculate and evaluate the CO<sub>2</sub> emissions for your Concept Select Solution
  - d. Optimise (fine tune) your Concept Select solution by iterating on your solution and decide on your final development (*Concept Define*). Include your CO<sub>2</sub> emissions calculations from Task IIc.
- Task III: Write your Field Development Plan (FDP) for your final Concept Define scenario. Based on this FDP your line manager will decide if the company will invest in the development of the STEM oil field.

# **STEM in the Pipeline Report Guide**

The teams are required to submit **3 hard copies and 1 electronic copy** of your completed report to TechFest by **4pm on Wednesday 27<sup>th</sup> November** for assessment.

## **Assessment Categories For Project Report:**

Project planning and management  
Analysis of the problem  
Problem solving & creativity  
Accuracy of chosen solution  
Level of research & technical knowledge  
Project report

## **How to Layout Your Report**

1. Cover Page
  - Title of the report
  - Name of author(s) in alphabetical order by surname
  - Date of submission
  - List of affiliations e.g. company, university etc.
  - Any logo(s) if applicable
  - Word count if applicable
2. Executive Summary
  - A brief summary of the contents of the report.
3. Table of Contents
  - Everything in numerical order by page
  - Page numbers should be included in the footer, excluding the cover page
4. Introduction
  - State the purpose of the report
  - Introduce the main points that will be covered in the report. Don't go into too much detail as this will be in the main body
5. Main Body
  - This should be broken down into headings and, where necessary, sub-headings
  - For example:
    - 1. Example
      - 1.1 example
      - 1.2 example
    - 2. Example
      - 2.1 example
      - 2.2 example
6. Conclusion
  - A summary of the main or important points
7. Recommendations
  - Any actions that should be taken as a result of the information found in the report
8. References/Bibliography
  - Sources for all the information
9. Appendices
  - Any additional information to go along with headings in the report

When writing your report be sure to keep in mind the CREST criteria that you will need to fulfil in order to achieve your silver CREST award. For a full breakdown of the CREST criteria, including examples, please see the below link.

<https://help.crestawards.org/portal/kb/articles/crest-silver-criteria-guidance>

However, please remember that the given examples are designed as an illustration of how the criteria might be met but are in no way designed to be exhaustive or prescriptive.

## **Presentation Day**

You are then invited to come to the Presentation Day at BP on Wednesday 11<sup>th</sup> December with your poster and report to give a presentation to a panel.

### **Assessment Categories for Poster and Presentation:**

Verbal presentation  
Evaluation against the brief  
Communication / Co-operation of Student Team  
Display at the stand

### **Booth dimensions (subject to change, will be confirmed closer to Presentation Day)**

- Your booth will be set up ready for you to populate and will consist of:
  - 3 x 1m wide x 2m high panels
  - 1 x 4ft clothed trestle table
  - 2 x chairs
  - Double sided Velcro dots

Any additional equipment you require or propose to bring must be requested.

There is no access to power on your booth therefore please ensure any laptops and devices are fully charged. You will not have access to plasma screens so any presentations are to be shown on personal laptops and devices.

You will need to populate your booth with any posters/ pop-ups and set up pre-approved equipment that you plan to display. The booth panels are made of felt and poster can be attached using double sided Velcro dots we will provide for you.