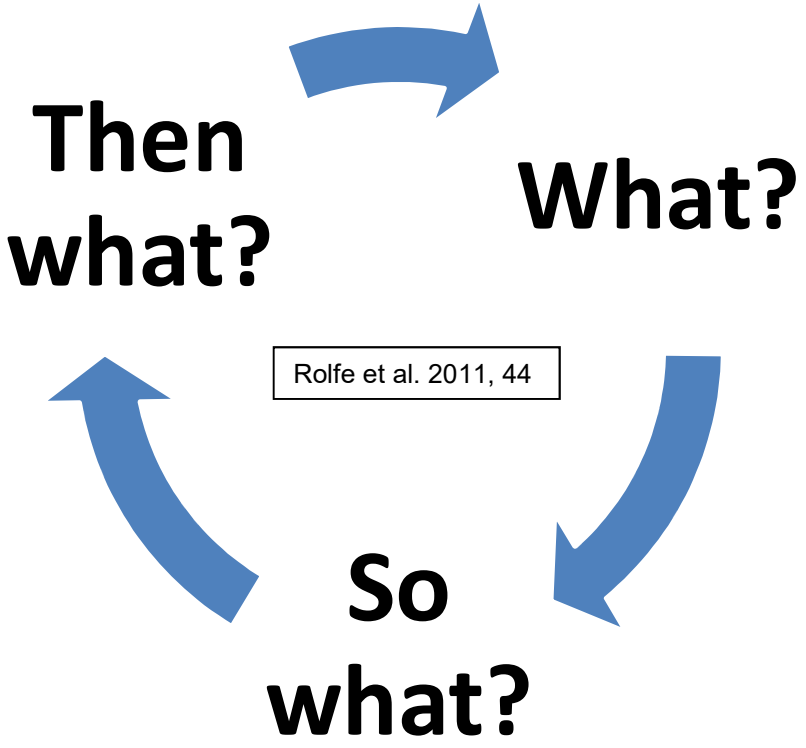
GLASGOW CALEDONIAN UNIVERSITY

GA Engineering – Level 1 Logbook (2023-24)

"Trimester A"

Reflective Cycle



Rolfe et al. 2011, 44

What?
Provide a Description of The Activity (to be) carried out

So what?
Student Reflections & Analysis

Then what?
Discussion & Planning with the Industrial Mentor

Notes:

Please fill out this logbook each week as you go along, as per the guidance documents and videos posted on GCU Learn.

You may edit the sections highlighted in yellow only.

Note: You can only use “Programme” (Option 2) a maximum of twice per trimester and, for “Module” (Option 1), you should not use the same Competence against the same Module more than twice per trimester. For example, in Trimester A, Level 1 students can use Competence C1 with Mathematics 1 twice maximum per trimester and also with Engineering Science twice maximum; however, Mathematics 1 can be used with other competences that apply (e.g. C2, C3) up to a maximum of two times, and so on.

You may insert pictures into the yellow spaces, but ensure you keep the memory down by using MS Paint, or another suitable drawing package, to smart-size them (especially hi-res photographs).

To position images - after insertion, right-click on the image and select *Wrap Text → Square* and drag and drop into place. Note that the *In-line with Text* option can also be used, but this pushes text down the page and is not the most economical in terms of space.

Signatures should be written-in-ink and captured either as scanned images (or produced using a pen/tablet and copied as an image).

To position images of signatures – after insertion (you can only do this in the yellow spaces, but you can then move the image anywhere you want afterwards), right-click on the image and select *Wrap Text → In Front of Text* and drag and drop into place. Number and label all figures (e.g. Figure 1 – Pressure Vessel Testing).

Upload your logbook to GCU Learn every Friday with or without mentor signatures, but aim to be no more than one or two weeks behind on mentor signatures.

When copying and pasting text from other documents, make sure to use Paste Special from the home tab and select the “Keep Text Only” option to retain the local format.

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet Week 1

Student Name: Jeff Gibson	**Year of Course:** Year 1
Evidence Type: Module **Job Description:** To determine the forces in a water flow test facility	**Module:** Engineering Science **Module No:** M1H326688

Competence Description (from GA UK_Spec Map): Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems	**UK Spec Ref Code:** C1

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The design team have requested a calculation of the forces that will arise from the weight and flow through the proposed parallel test line to be installed in the water flow facility. I was asked to analyse these forces at maximum flow (worst case scenario) to see if the existing pipe stands would be sufficient to support the loads.

Documents referred to:
- WD-456 rev 1 Revision to Flow Facility at Flowmeister Ltd.
- Work Instruction XYZ-4 "Health and Safety issues on the water flow test facility"
- Flow of Fluids through Valves, Fittings and Pipes (Metric Edition), Crane Ltd. Technical Paper No. 410M, 1988

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

I carried out an initial calculation of the forces on the strut arising from the weight of the piping and the flow forces using hand calculations. I double-checked the hand-calculations using the Free Online Beam Calculator software https://skyciv.com/free-beam-calculator/. I needed to produce vector diagrams of the forces acting on the stands and to also consider the increased weight from the bend sections.

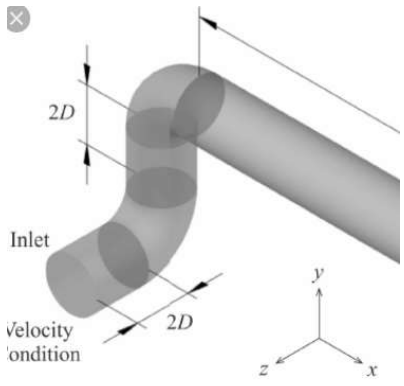


Figure 1 – test facility

Using a factor of safety of 1.3, this initial calculation has shown that the existing stands will need to be replaced as they are not sturdy enough to support the pipes at maximum flow.

In addition, as there are two sets of out-of-plane double bends with vertical sections at either end of the test section (see figure), 4 OFF ratchet straps will be needed to restrict the movement of the pipes at maximum flow owing to vibration etc. The design team are looking to perform a Finite Element Analysis (FEA) of the pipework and supports as there are plans also to increase the flow capacity (and line size) for commissioning of the valve testing rig in early 2021.

Student Reflections:

The Module, *Engineering Science* and, specifically, the competence *"Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems"* helped me a lot in doing this task as it involved bending diagrams, vectors and beam theory.

I struggled a bit with this task initially, but my colleague, John Smith, from the design team was able to assist me from an initial walk-about of the existing facility with the drawing of the proposed modifications in-hand. He also provided me with a login to access the company work instructions, reports and paperwork needed which were on a separate locked drive.

During the discussions with the design team, I was given a demo of the Finite Element software ANSYS and would be very interested to learn more about FEA and CFD in the future.

I will need to get *Solidworks eDrawings* Viewer installed on my PC at work next week in order to be able to open and view the 3D drawings of the flow facility as I will be getting more involved with the facility refurb over the coming months.

Mentor Comments:

Jeff has demonstrated that he is putting into practice what he has learned at University and is clearly developing his skills in analysing real-life problems—here, the forces due to flow and vibration etc.

Jeff is new to flow and has mentioned that he is looking forward to Mechanical Principles where he will get more background in the principles of fluid mechanics. This will back-up his knowledge of structural mechanics that he has already built up during his 2.5 years at Flowmeister Ltd.

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature..... **Date** 29/08/2023

Student Signature ..... **Date** 29/08/2023

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet Week 2

Student Name:	**Year of Course:** Choose an item.
Evidence Type: Choose an item. **Job Description:**	**Module:** **Module No:**

Competence Description (from GA UK_Spec Map):	**UK Spec Ref Codes:**

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

Student Reflections:

Mentor Comments:

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature…….. **Date** Click or tap to enter a date.

Student Signature …… **Date** Click or tap to enter a date.

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet Week 3

Student Name:	**Year of Course:** Choose an item.
Evidence Type: Choose an item. **Job Description:**	**Module:** **Module No:**

Competence Description (from GA UK_Spec Map):	**UK Spec Ref Code:**

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

Student Reflections:

Mentor Comments:

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature…… **Date** Click or tap to enter a date.

Student Signature …… **Date** Click or tap to enter a date.

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet Week 4

Student Name:	**Year of Course:** Choose an item.
Evidence Type: Choose an item. **Job Description:**	**Module:** **Module No:**

Competence Description (from GA UK_Spec Map):	**UK Spec Ref Code:**

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

Student Reflections:

Mentor Comments:

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature…… **Date** Click or tap to enter a date.

Student Signature …… **Date** …Click or tap to enter a date.

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet **Week 5**

Student Name:	**Year of Course:** Choose an item.
Evidence Type: Choose an item. **Job Description:**	**Module:** **Module No:**

Competence Description (from GA UK_Spec Map):	**UK Spec Ref Code:**

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

Student Reflections:

Mentor Comments:

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature…….. **Date** …Click or tap to enter a date.

Student Signature …… **Date** …Click or tap to enter a date.

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet Week 6

Student Name:	**Year of Course:** Choose an item.
Evidence Type: Choose an item. **Job Description:**	**Module:** **Module No:**

Competence Description (from GA UK_Spec Map):	**UK Spec Ref Code:**

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

Student Reflections:

Mentor Comments:

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature…….. **Date** Click or tap to enter a date.

Student Signature …… **Date** Click or tap to enter a date.

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet Week 7

Student Name:	**Year of Course:** Choose an item.
Evidence Type: Choose an item. **Job Description:**	**Module:** **Module No:**

Competence Description (from GA UK_Spec Map):	**UK Spec Ref Code:**

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

Student Reflections:

Mentor Comments:

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature…… **Date** Click or tap to enter a date.

Student Signature …… **Date** Click or tap to enter a date.

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet Week 8

Student Name:	**Year of Course:** Choose an item.
Evidence Type: Choose an item. **Job Description:**	**Module:** **Module No:**

Competence Description (from GA UK_Spec Map):	**UK Spec Ref Code:**

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

Student Reflections:

Mentor Comments:

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature…….. **Date** Click or tap to enter a date.

Student Signature …… **Date** Click or tap to enter a date.

GLASGOW CALEDONIAN UNIVERSITY

GA Student Log Book Sheet Week 9

Student Name:	**Year of Course:** Choose an item.
Evidence Type: Choose an item. **Job Description:**	**Module:** **Module No:**

Competence Description (from GA UK_Spec Map):	**UK Spec Ref Code:**

Provide a description of the activity (to be) carried out:
(Reference: Documents / Drawings used / H&S /Safe Access / PPE / Tools and Equipment / Materials)

The Activity:
(Reference Hand Over Procedures / Restoring the Workplace)

Student Reflections:

Mentor Comments:

Mentor Statement: I have read the above report and can confirm that the task outlined above is a true account of the activities that this apprentice performed. This work was completed to a satisfactory standard and within an acceptable timescale.

Mentor Signature…….. **Date** Click or tap to enter a date.

Student Signature …… **Date** Click or tap to enter a date.