Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

APPENDIX GA36a

LEVEL 4 ASSESSMENT SPECIFICATION

Student name:		**Student ID number:**	
Programme:	**Cert HE: Skills for Construction, Computing, Engineering & Digital skills**		
Module:	**Technical Skills Development**		
Module code:	**ACMA4014**	**Contribution to Overall Module Assessment (%):**	**50%**
Lecturer:	**Jordan R. Jenkins**	**Internal Verifier:**	**Ryan James**
Assignment Title:	**Excel Practical Assessment**	**Word count (or equivalent):**	**Excel Workbook**
Submission deadline:	**25/04/2023**	**Return date of provisional marks & written feedback:**	**20 Working Term Time Days from Submission**
Submission method:	All written assessments, where practical and possible, must be submitted via Turnitin unless otherwise instructed by the Lecturer. (Please DO NOT put this assessment specification into Turnitin or it will match many similarities with other students' submissions.) **Alternative submission method (if applicable):** Your file **must** be named as follows: FirstName_ FamilyName_StudentNumber.xlsx **Your Script should be emailed to:** j.jenkins@uwtsd.ac.uk **Late submission of the assessment will result in a late penalty mark.** Penalties for late submission: Up to one week late, maximum mark of 40%. Over one week late, 0%. Only the Extenuating Circumstances Panel may approve a change to submission dates.		
Academic honesty / referencing:	Academic honesty is required. In the main body of your submission you must give credit to authors on whose research and ideas your work is based. Append to your submission a reference list that indicates the books, articles, etc. that you have used, cited or quoted in order to complete this assessment.		

Module Learning Outcomes (from module syllabus)
Learning Outcomes • The ability to demonstrate a range of practical skills and related knowledge, relevant to the area of study.

TASK DESCRIPTION

You are required to develop an Excel workbook that demonstrates your ability to:

- Organise data
- Solve basic equations
- Use predefined functions
- Apply conditional formatting rules
- Use conditional statements
- Produce charts/graphs

*You **<u>are not</u>** required to produce a written report. However, you **<u>must</u>** describe, in your own words, the functionality of each section of your workbook by adding appropriate annotations to the sheet.*

Task 1a (10 Marks)

Scenario: A race car competing in a drag race accelerates from rest and crosses the finish line with a top speed of 240 km/h (66.66 m/s). The race track is 400m long.

- Calculate the acceleration value of the race car.
- Determine the time taken for the race car to complete the drag race.

$$a = \frac{v^2 - u^2}{2.s} \qquad t = \frac{v-u}{a}$$

v = final velocity (ms^{-1}), u = initial velocity (ms^{-1}), a = acceleration (ms^{-2}), s = distance (m), t= time (s)

Remember to use SI units when performing calculations.

Task 1b (30 Marks)

Your spreadsheet should contain a cell that allows the user to provide an estimate the acceleration value (between 1 & 10 ms^{-2}). Using this user-inputted value:

- Calculate the distance required for the race car to reach the top speed (240 km/h) and return the value to an appropriate cell.
- Calculate the time taken for the car to complete the race and return the value to an appropriate cell.
- Using a conditional statement and conditional formatting, your spreadsheet should return the following messages to an appropriate cell if the corresponding conditions are met:

Condition	Message	Formatting Rule
Time > 17s	"The car will lose the race – Acceleration value too low!"	**Highlight Cell Red**
Time < 12s	"Impossible! – the race car cannot accelerate this quickly!"	**Highlight Cell Amber**
Time 12>= and <=17s	"The car will win the race"	**Highlight Cell Green**

Task 1c (10 marks)

Using appropriate Excel tools:

- Create a simple velocity-time graph using the values calculated above.
- Annotate your graph by adding appropriate title & axis labels.
- Customise your graph by altering the line type, thickness and colour etc.

(Figure 1 is an example of a velocity-time graph for uniform deceleration)

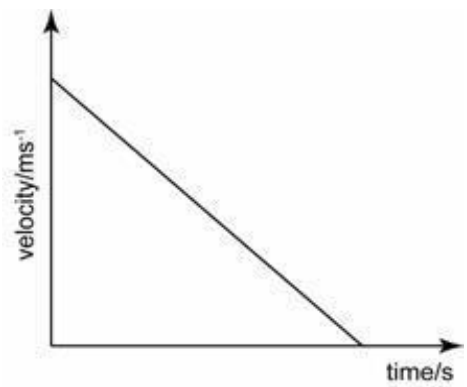

Figure 1:Simple Velocity-Time Graph

Task 2a (40 Marks)

Scenario
Three Individual technicians have been asked to measure and record the thickness of 20 material samples as part of a study to understand measurement variability. The data has been tabulated below:

Sample	Actual size	Technician A	Technician B	Technician C
1	0.70	1.50	1.00	1.40
2	2.10	1.80	2.00	2.50
3	1.10	2.00	2.00	1.60
4	1.60	0.80	2.00	1.60
5	2.70	3.00	3.50	3.00
6	0.55	1.20	1.00	1.00
7	0.27	1.20	1.00	0.70
8	0.40	0.50	1.00	0.90
9	6.00	5.50	6.50	6.20
10	1.12	0.50	1.50	1.40
11	1.30	2.10	1.50	1.70
12	0.98	1.00	1.00	1.30
13	1.15	1.80	1.50	1.60
14	0.52	1.50	1.00	1.00
15	1.80	2.00	2.50	2.10
16	7.50	6.00	8.00	7.00
17	0.28	1.00	1.00	0.80
18	0.50	0.90	1.20	0.80
29	4.90	4.50	5.50	4.90
20	0.25	0.50	1.00	0.50

Using appropriate tools and functions in Excel, perform basic statistical analysis to assess the sizing accuracy of the individual technicians, as well as the measurement procedure/dataset as a whole.

Your analysis **should** include:

- Mean & range calculations
- A graph plotting all measured values against actual size
- Graphs plotting measured values against actual size for each operator

Note: *Describe any graphs produced, and what they show, by adding annotations to the sheet.*

From this analysis, answer the following three questions:

1. Which operator performed best and why?
2. Which operator performed worst and why?
3. Are there any similarities/differences between the operators?

Note: *You **must** answer these questions, in your own words, by adding appropriate annotations to the spreadsheet.*

Task 2b – Optional (10 Marks)

You may also wish to include (**but are not limited to**) any of the following:

- Measurement error calculations
- Measures of variation/dispersion (i.e. standard deviation)
- Frequency distribution charts
- Any other forms of analysis that you wish to add to further demonstrate your understanding

MARKING CRITERIA AND STUDENT FEEDBACK

This section describes how marks will be awarded for this assessment. The extent to which the marking criterion are demonstrated within your code determines the number of marks awarded. The marks available for each criterion are shown and feedback will be provided in the 'Comments' box below.

Marking Criteria	Comments	Marks Awarded
Task 1 (50 Marks Total) **Task 1a (10 marks)** – The degree to which you have demonstrated an ability to use formulas in Excel. – Correctness of calculations performed. **Task 1b (30 marks)** – Ability to use user-inputted variables within formulas – The extend to which you have demonstrated a logical approach to using conditional statements. – Correct use of conditional formatting rules **Task 1c (10 marks)** – Proper construction of a velocity-time graph using values calculated in task 1b. – Presentation style (chart title, axes labels etc.) – Customisation of graph (line type, thickness and colours etc.)		
Task 2 (50 Marks Total) **Task 2a (40 marks)** – Correct mean and range calculations – Construction of appropriate graphs as required, properly formatted (chart title, axes labels etc.), presented with clear and concise annotations. – The justifications given to your responses to the three questions outlined above. **Task 2b - Optional (10 marks)** Marks awarded in this section are based on whether or not/how well the optional tasks have been completed: – Inclusion of measurement error calculations, measures of variation/dispersion, frequency distribution charts. – Depth of any further analysis performed.		

Assessment Mark (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)	**Late Submission Penalties (tick if appropriate)**		**%**
	Up to 1 week late (40% Max)		
	Over 1 week late (0%)		

WORK SUBMISSION

Your Excel file **must** be named as follows: FirstName_ FamilyName_StudentNumber.xlsx and should be emailed to: j.jenkins@uwtsd.ac.uk

GUIDANCE FOR STUDENTS IN THE COMPLETION OF TASKS

NOTE: The guidance offered below is linked to the five generic assessment criteria overleaf.

1. Engagement with Literature Skills

Your work must be informed and supported by scholarly material that is *relevant* to and *focused* on the task(s) set. You should provide evidence that you have accessed an appropriate *range* of sources, which may be academic, governmental and industrial; these sources may include academic journal articles, textbooks, current news articles, organisational documents, and websites. You should consider the *credibility* of your sources; academic journals are normally highly credible sources while websites require careful consideration/selection and should be used sparingly. Any sources you use should be current and up-to-date, mostly published within the last five years or so, though seminal/important works in the field may be older. You must provide *evidence* of your research/own reading throughout your work, using a suitable referencing system, including in-text citations in the main body of your work and a reference list at the end of your work.

2. Knowledge and Understanding Skills

At level 4, you should be able to demonstrate knowledge of the underlying concepts and principles associated with your area(s) of study. *Knowledge* relates to the facts, information and skills you have acquired through your learning. You demonstrate your *understanding* by interpreting the meaning of the facts and information (knowledge). This means that you need to select and include in your work the concepts, techniques, models, theories, etc. appropriate to the task(s) set. You should be able to explain the theories, concepts, etc. to show your understanding. Your mark/grade will also depend upon the *extent* to which you demonstrate your knowledge and understanding.

3. Cognitive and Intellectual Skills (defence and evaluation of designs)

You should be able to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of your subject(s) of study. You should be able to evaluate the appropriateness of different approaches to solving problems related to your area(s) of study and/or work. Your work must contain evidence of logical, analytical thinking. For example, to examine and break information down into parts, make inferences, compile, compare and contrast information. This means not just describing what! But also justifying: Why? How? When? Who? Where? At what cost? You should provide justification for your arguments and judgements using evidence that you have reflected upon the ideas of others within the subject area and that you are able to make sound judgements and arguments using data and concepts. Where relevant, alternative solutions and recommendations may be proposed.

4. Practical Skills

At level 4, you should be able to apply the basic underlying concepts and principles to evaluate and interpret these within the context of your area of study. You should be able to demonstrate how the subject-related concepts and ideas relate to real world situations and/or a particular context. How do they work in practice? You will deploy models, methods, techniques, and/or theories, in that context, to assess current situations, perhaps to formulate plans or solutions to solve problems, or to create artefacts. This is likely to involve, for instance, the use of real world artefacts, examples and cases, the application of a model within an organisation and/or benchmarking one theory or organisation against others based on stated criteria.

5. Transferable Skills for Life and Professional Practice

Your work must provide evidence of the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility. This includes demonstrating: that you can communicate the results of your study/work accurately and reliably, and with structured and coherent arguments; that you can initiate and complete tasks and procedures, whether individually and/or collaboratively; fluency of expression; clarity and effectiveness in presentation and organisation. Work should be coherent and well-structured in presentation and organisation.

GENERIC ASSESSMENT CRITERIA

Level 4
In accordance with the Framework for Higher Education Qualifications, at the end of Level 4 students will be expected to have demonstrated knowledge of the basic underlying concepts and principles of a subject, and an ability to evaluate and interpret these within the context of that area of study. They should be able to present, evaluate and interpret qualitative and quantitative data in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of their subject(s) of study. They will have learned how to evaluate different approaches to solving problems, and will be able to communicate the results of their study/work accurately and reliably, and with structured and coherent arguments. They will be able to undertake further training and develop new skills within a structured and managed environment and will have the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility.

Level 4	FAIL	MARGINAL FAIL	SATISFACTORY (3rd / Pass)	GOOD (2.2 / Pass)	VERY GOOD (2.1 / Merit)	EXCELLENT (1st / Distinction)	EXCEPTIONAL (1st / Distinction)
Category	**0-29%**	**30-39%**	**40-49%**	**50-59%**	**60-69%**	**70-84%**	**85-100%**
Engagement with literature (including reading, referencing, academic conventions and academic honesty)	Little or no evidence of reading and/or reliance on inappropriate sources. Views and findings mostly unsupported and non-authoritative. Referencing conventions used incoherently or largely absent.	Poor engagement with essential reading. No evidence of wider reading. Reliance on inappropriate sources, and/or indiscriminate use of sources. Heavily reliant on information gained through class contact. Inconsistent and weak use of referencing.	Engagement with a limited range of mostly relevant and credible sources but with some reliance on information gained through class contact. Some omissions and minor errors. Referencing conventions evident though not always applied accurately or consistently.	Engagement with an appropriate range of literature, including sources retrieved independently. Some over-reliance on texts rather than other sources. Referencing may show minor inaccuracies or inconsistencies.	Engagement with a wide range of literature, including sources retrieved independently. Selection of relevant and credible sources. Generally sound referencing, with no/very few inaccuracies or inconsistencies.	Engagement with an extensive range of relevant and credible literature. Consistently accurate application of referencing.	Exceptional engagement with an extensive range of relevant and credible literature. High-level referencing skills consistently applied.
Knowledge and understanding (Knowledge of the basic underlying concepts and	Major gaps in knowledge and understanding of the basic underlying concepts and	Gaps in knowledge of the basic underlying concepts and principles, with flawed or	Limited knowledge and understanding of the basic underlying concepts and	Knowledge of the basic underlying concepts and principles is accurate with a	Competent knowledge of the basic underlying concepts and principles. Exhibits very	Excellent knowledge and understanding of the basic underlying concepts and	Exceptional, detailed knowledge and understanding of the basic underlying

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Category	**0-29%**	**30-39%**	**40-49%**	**50-59%**	**60-69%**	**70-84%**	**85-100%**
principles of a subject.)	principles of the subject matter. Inclusion of irrelevant material. Substantial inaccuracies.	superficial understanding. Some significant inaccuracies and/or irrelevant material.	principles within the subject area. Some elements may be missing.	good understanding of the field of study but lacks depth and/or breadth.	good understanding.	principles of the subject.	concepts and principles
Cognitive and intellectual skills (Evaluate underlying concepts and principles of a subject and interpret qualitative and quantitative data in order to develop lines of argument and make sound judgements.)	Wholly or almost wholly descriptive work. Little or no evaluation of the underlying concepts and principles. Failure to develop arguments, leading to illogical or invalid judgements. Minimal or no use of evidence to back up views.	Largely descriptive work, with superficial evaluation of the underlying concepts and principles. Weak interpretation of data, flawed development of arguments and judgements. Information accepted uncritically, uses generalised statements made with scant evidence and unsubstantiated opinions. Ideas sometimes illogical and contradictory.	Limited attempt at evaluation of the underlying concepts and principles, tending towards description. Can interpret qualitative and quantitative data but with some errors. Some evidence to support emerging arguments and judgements but these may be underdeveloped or with a little inconsistency / mis-interpretation.	Good evaluation of the underlying concepts and principles. Can interpret qualitative and quantitative data, with minor errors. An emerging ability to use evidence to support the argument. Mostly valid arguments and logical judgements.	Sound evaluation of the underlying concepts and principles. Can interpret qualitative and quantitative data accurately. Ability to devise arguments using evidence to make mostly appropriate and valid judgements.	Excellent evaluation of the underlying concepts and principles. Can interpret qualitative and quantitative data accurately and with some insight. Excellent ability to devise arguments using evidence and make appropriate and valid judgements.	Exceptional evaluation of the underlying concepts and principles based evidence. Outstanding interpretation of qualitative and quantitative data. Exceptional ability to devise arguments using evidence and make wholly appropriate and valid judgements.
Practical skills (Different approaches to solving problems in particular contexts.)	Limited or no use of taught, basic methods, materials, tools and/or techniques. Little or no appreciation of the context of the application.	Rudimentary application of taught, basic methods, materials, tools and/or techniques but without consideration and	An adequate awareness and mostly appropriate application of basic methods, materials, tools and/or techniques.	A good and appropriate application of basic methods, materials, tools and/or techniques. Clear appreciation of	A very good application of a range of basic methods, materials, tools and/or techniques. Very good consideration of the context of	An advanced application of a range of taught, basic methods, materials, tools and/or techniques. The context of the application is	Exceptional levels of application and deployment skills in particular practical contexts. Outstanding identification of

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Category	**0-29%**	**30-39%**	**40-49%**	**50-59%**	**60-69%**	**70-84%**	**85-100%**
	Very weak evidence of different approaches to problem-solving in particular contexts.	competence. Flawed appreciation of the context of the application. Weak evidence of different approaches to problem-solving in particular contexts.	Basic appreciation of the context of the application. Can identify problems in particular contexts and propose basic alternative approaches or solutions though there may be errors.	the context of the application. Good evidence of different approaches to problem-solving in particular contexts and proposes mostly appropriate solutions.	the application. Very good evidence of different approaches to problem-solving in particular contexts and proposes appropriate solutions.	well considered, and insightful. Excellent evidence of different approaches to problem-solving in particular contexts and proposes appropriate solutions.	problems in particular contexts and formulation of wholly appropriate, thoughtful solutions / different approaches.
Transferable skills for life and professional practice (Communicate the results of their study/work accurately and reliably, and with structured and coherent arguments; the qualities needed for employment requiring the exercise of some personal responsibility within a structured and managed environment.)	Work is poorly structured, disorganised, inaccurate and/or confusingly expressed. Very weak use of language and/or very inappropriate style. Failure to work effectively individual or as part of a group. Little or no evidence of the skills for employment requiring the exercise of some personal responsibility.	Work is poorly presented in a disjointed manner. It is loosely, and at times incoherently, structured, with information and ideas often poorly expressed. Weak use of language and/or inappropriate style. Flawed approach to individual or group work, meeting only partial obligations to others. Limited evidence of the skills for employment requiring the	Mostly ordered presentation and structure in which relevant ideas / concepts are reasonably expressed. Work may lack coherence and/or accuracy in places. Can work as part of a group, meeting most obligations to others but perhaps with limited involvement in group activities. Demonstrates the basic skills for employment requiring the exercise of some personal responsibility, with some areas	Mostly coherent, organised and accurate work, in a suitable structure and is for the most part clearly expressed. Can work effectively independently and/or as part of a team, with clear contribution to group activities. Demonstrates the skills for employment requiring the exercise of some personal responsibility, with some areas of strength and some of minor weakness.	Work is accurate, coherent, fluent, well-structured and organised. Can work effectively independently and/or as part of a team, with very good contribution to group activities. Demonstrates very good skills for employment requiring the exercise of some personal responsibility, with just occasional minor weakness.	Work is coherent, very fluent and is presented professionally. Can work effectively independently and/or as part of a team, with an excellent contribution to group activities. Demonstrates excellent skills for employment requiring the exercise of some personal responsibility with an appetite for further development.	Work is accurate, exceptionally coherent, very fluent and presented well. Can work effectively independently and/or as part of a team, with an exceptional contribution to group activities. Demonstrates exceptional skills for employment requiring the exercise of some personal responsibility with an appetite for further development.

Level 4	FAIL	MARGINAL FAIL	SATISFACTORY (3rd / Pass)	GOOD (2.2 / Pass)	VERY GOOD (2.1 / Merit)	EXCELLENT (1st / Distinction)	EXCEPTIONAL (1st / Distinction)
Category	**0-29%**	**30-39%**	**40-49%**	**50-59%**	**60-69%**	**70-84%**	**85-100%**
		exercise of some personal responsibility.	of minor weakness.				

THIS DOCUMENT IS ALSO AVAILABLE IN WELSH