



ITSU2011

Computational Mathematics

Assignment 1

Weightage: 15%

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Project Submission deadline: Session 6

The purpose of project is to assess students on the following Learning Outcomes:

LO No	Learning Outcome	AQF 7 Mapping *		
		K	S	A
LO 2	Evaluate and construct elementary mathematical arguments and synthesize induction hypotheses, direct proofs, proofs by contradiction, and proofs by mathematical induction.	x	x	x
LO 3	Apply basic logic to the analysis of digital logic circuits, predicate logic to statements and arguments, and rules of inference to analyse arguments.	x	x	x

* **K= Knowledge S= Skills A= Application of Knowledge & Skills**

Marking guide:

Note: This Marking Scheme is used as a guide only to the final grade, and rubric will be created upon.

Task	Level of Performance					
	Not at all 0	Just attempted 1	Barely met 2	Fairly met 3	Just met 4	Expectation met 5
Question 1						
Question 2						
Question 3						
Question 4						

Total: /20 marks
To be scaled to 15 marks

Total: /15 marks

READ THE FOLLOWING GUIDELINES CAREFULLY AND UNDERSTAND ALL REQUIREMENTS BEFORE STARTING THIS PROJECT

Project Submission

Your submission will contain a Word document.

- 1) A word document (*PDF will not be accepted*) with solutions.

Name (1) as *ID_Fname* and submit via LMS.

Please be clear that the unit coordinator will not be responsible for a student who is *unable to submit successfully working copies of files in their submission*. The student will have no further chance to submit files or receive any remarking if this is the case. Make sure you have fully tested your application before zipping and submitting. Your submission will be unzipped and placed into the marker's folder directory for marking, so keep this in mind.

Computational Mathematics Assignment 1

Q1) Make a truth table for the statement $\neg P \wedge (Q \rightarrow P)$. What can you conclude about P and Q if you know the statement is true?

[5 marks]

Q2) Proof by induction that $\sum_1^x x^3 = \frac{x^2(x+1)^2}{4}$.

[5 marks]

Q3) Proof by contradiction that $\sqrt{13}$ is irrational.

[5 marks]

Q4) There are AND, OR, NOT, NAND and NOR gates applied in logical circuits. You are required to explore each one of them by producing a TRUTH table and symbol for each gate. Note, two inputs in a truth table are sufficient (not two rows).

[5 marks]