

## Assessment Guidelines for Experimental Design (B1)

Mark range	Quality of work	Performance
9-10	Excellent	The report shows <b>most</b> of the good performances and <b>a few</b> excellent performances.
6-8	Good	The report shows <b>most</b> of the basic performances and <b>some</b> good performances.
3-5	Fair	The report shows <b>some</b> basic performances and <b>a few</b> good performances.
1-2	Poor	The report shows <b>a few</b> basic performances.

Category	Basic Performance	Good Performance	Excellent Performance
Dependent variable (DV) & independent variables (IV)	1. Identify the DV and IV	9. Explain why the variables are DV and IV in the investigation	
		10. Identify multiple IV/DVs	
	2. State the methods of measurement/manipulations.	11. Explain how variables are connected with the manipulations and measurements	20. Explain the limitations of the measurement method(s) and for the variable(s)
			21. Discuss the strengths and limitations of the alternative measurement method(s)
Control variables (CV)	3. Predict the experimental results based on the relationships between the variables		
	4. Identify some CVs	12. Identify important CVs	22. Explain how some important CVs can be controlled
	5. Identify the control set-up(s)	13. Explain why the control set-up(s) (e.g. positive and negative controls) is/are needed	23. Discuss the limitations of the control set-up(s)
Measurement	6. Identify important measurement errors	14. Suggest ways to reduce measurement errors/enhance reliability, e.g. repeated measurements	24. Explain why some procedures can reduce measurement errors (e.g. repeated measurement for reducing random errors; calibration for reducing systematic errors; involving one person to observe the results to reduce subjectivity)
Sampling (if any)		15. Identify sampling issues/errors	25. Suggest and explain ways to reduce sampling errors (e.g. increasing sample size, random sampling)
Hypothesis (if any)	7. Identify the hypothesis tested	16. Distinguish the hypothesis from the observable predictions derived from it	26. Assess the extent to which the prediction gives support to the hypothesis
Assumptions (if any)			27. Explain the significant assumptions of the design
Others		17. Explain why a specific step is conducted	
	8. State briefly the underlying biological principles and/or concepts related to the experimental design	18. Explain how the overall experimental design is related to underlying biological principles and/or concepts	
		19. Suggest alternative designs	28. Discuss the limitations and strengths of the alternative designs (e.g. within subject and between subject design)