

## Rubrics for Science Laboratory Skills

### Faculty of Applied Sciences, Universiti Teknologi MARA, 40450 Shah Alam Selangor, MALAYSIA

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#### RUBRICS FOR ASSESSING LABORATORY PRACTICAL EXAM AND LAB-RELATED ASSESSMENT TASKS

CRITERIA		STANDARDS				
		Superb: 4 (A+, A)	Going beyond 3 (A-, B+, B-)	Meeting the mark: 2 (C+, C)	Needs more work: 1 (C-,D)	Miss the mark: 0 (E,F)
RESEARCH DESIGN (TO BE DONE BY INSTRUCTORS ONLY)	PLANNING	<b>At least 7 predictions were made.</b> Measurement tools, the experimental setup (schematics or diagram), the measurement or data collection techniques, precautionary measures, independent and dependent variables <b>were SUPERBLY described.</b> The actual setup were constructed as planned or were and the learner have full control on the setup and the measuring devices.	<b>At least 5 predictions were made.</b> Measurement tools, the experimental setup (schematics or diagram), the measurement or data collection techniques, precautionary measures, independent and dependent variables <b>were PROFICIENTLY described.</b> The actual setup were constructed as planned and the learner have moderate control on the setup and the measuring devices.	<b>At least 4 predictions were made.</b> Measurement tools, the experimental setup (schematics or diagram), the measurement or data collection techniques, precautionary measures, independent and dependent variables <b>were ADEQUATELY described.</b> The actual setup require some modification and the learner have some control on the setup and the measuring devices.	<b>Minimal predictions were made.</b> Measurement tools, the experimental setup (schematics or diagram), the measurement or data collection techniques, precautionary measures, independent and dependent variables <b>were NOT CLEARLY described.</b> The actual setup require major modification and the learner have minimal control on the setup and the measuring devices.	<b>No predictions were made.</b> Measurement tools, the experimental setup (schematics or diagram), the measurement or data collection techniques, precautionary measures, independent and dependent variables <b>were NOT described or minimally described.</b> The actual setup require major overhaul and the learner have nol control on the setup and the measuring devices.
DATA COLLECTION & ORGANISATION	DATA	Data collected is BEYOND relevance and EXREMELY SUFFICIENT to answer the question. Data was NEATLY tabulated in SPREADSHEET. Each column was labeled with the appropriate quantity, units (and prefixes - if required).	Data collected is relevant and sufficient to answer the question. Data was tabulated in SPREADSHEET. Each column was labeled with the appropriate quantity, units (and prefixes - if required).	Data collected is relevant and sufficient to answer the question. Data was tabulated in spreadsheet. Some columns were NOT labeled with the appropriate quantity, units and prefixes (if required).	Data collected is relevant and NOT sufficient to answer the question. Data was tabulated in spreadsheet. Some Columns were NOT labeled with the appropriate quantity, units and prefixes (if required).	Data collected was NOT relevant and NOT sufficient to answer the question. Data was tabulated in spreadsheet. Most columns were NOT labeled with the appropriate quantity, units and prefixes (if required).

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CRITERIA		STANDARDS				
		Superb: 4 (A+, A)	Going beyond 3 (A-, B+, B-)	Meeting the mark: 2 (C+, C)	Needs more work: 1 (C-,D)	Miss the mark: 0 (E,F)
DATA ANALYSIS & PRESENTATION	ANALYSIS	All collected data was transformed. Equation used to transform data is CLEARLY indicated in the spreadsheet cells. Data or transformed data is graphed where appropriate with the axis CLEARLY labeled along with the units and prefixes (if needed). Slope of initial graph, area under the graph, regression or best fit including regraping of slopes obtained from each data point or other appropriate information is obtained/calculated and CLEARLY shown.	All collected data was transformed. Equation used to transform data was CLEARLY indicated in the cells. Data or transformed data was graphed where appropriate with the axis CLEARLY labeled along with the units and prefixes (if needed). Slope of initial graph, area under the graph, regression or best fit including regraping of slopes obtained from each data point or other appropriate information is obtained/calculated.	All collected data was transformed. Equation used to transform data was indicated in the cells. Data or transformed data was graphed where appropriate but some of the axis, units and prefixes (if required) were NOT labeled. Slope of initial graph, area under the graph, regression or best fit including regraping of slopes obtained from each data point or other appropriate information was NOT obtained/calculated.	All collected data was transformed. Equation used to transform data was indicated in the cells. Data or transformed data was NOT graphed. Slope of initial graph, area under the graph, regression or best fit including regraping of slopes obtained from each data point or other appropriate information was NOT obtained/calculated.	Collected data was NOT transformed and NO ANALYSIS was done to the raw data
CONCLUSION	Conclusion	Conclusion is EXCELLENT and derived from the collected and analysed data and not from other sources. Conclusion CLEARLY answers the research questions or problem statement/s. Conclusion CLEARLY show support for rejecting or accepting ALL the predictions	Conclusion is GOOD and derived from the collected and analysed data and not from other sources and directly answer the research questions or problem statement/s. Conclusion show good support for rejecting or accepting ALL the predictions	Conclusion is GOOD and derived from the collected and analysed data and not from other sources but did not directly answering the research questions or problem statement/s. Conclusion sufficiently show support for rejecting or accepting MOST of the predictions	Conclusion is derived from the collected and analysed data but is NOT answering the research questions or problem statement/s. Conclusion vaguely show support for rejecting or accepting ALL the predictions	No attempt was made to conclude. Research questions were not answered. Conclusion did not show support for rejecting or accepting ALL the predictions