

SO6: An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

PI#	Performance Indicators [Weight]	Unsatisfactory	Developing	Satisfactory	Outstanding	Score
		1 Point	2 Points	3 Points	4 points	Max.
PI1	Develop Experiment [20%]	Inability; 1- to identify experimental objective (problem statement); 2- to describe the experimental process and methods; 3- to specify procedures, equipment, tools and materials (0-24% achievement)	Independently and/or as a part of a team; 1- to identify experimental objective (problem statement); 2- to describe the experimental process and methods; 3- to specify procedures, equipment, tools and materials; with major errors (25-49% achievement)	Independently and/or as a part of a team; 1- to identify experimental objective (problem statement); 2- to describe the experimental process and methods; 3- to specify procedures, equipment, tools and materials; with moderate errors (50-74% achievement)	Independently and/or as a part of a team; 1- to identify experimental objective (problem statement); 2- to describe the experimental process and methods; 3- to specify procedures, equipment, tools and materials; with minor/no errors (75-100% achievement)	4
PI2	Conduct Experiment [20%]	Inability; 1- to follow the procedure; 2- to set-up the experiment; 3- to systematically and accurately collect data while conducting the experiment (0-24% achievement)	Independently and/or as a part of a team 1- to follow the procedure; 2- to set-up the experiment; 3- to systematically and accurately collect data while conducting the experiment; with major errors (25-49% achievement)	Independently and/or as a part of a team; 1- to follow the procedure; 2- to set-up the experiment; 3- to systematically and accurately collect data while conducting the experiment; with moderate errors (50-74% achievement)	Independently and/or as a part of a team 1- to follow the procedure; 2- to set-up the experiment; 3- to systematically and accurately collect data while conducting the experiment; with minor/no errors (75-100% achievement)	4

PI#	Performance Indicators [Weight]	Unsatisfactory	Developing	Satisfactory	Outstanding	Score
		1 Point	2 Points	3 Points	4 points	Max.
PI3	Analyze Data [20%]	Inability; 1- to report raw data properly, 2- to calculate measurement errors systematically, 3-to process raw data by incorporating errors analysis, 4- to illustrate processed data** relevant to the questions given in the problem statement using appropriate tools (tables, figures, etc.) (0-24% achievement)	Independently and/or as a part of a team; 1- to report raw data properly, 2- to calculate measurement errors systematically, 3-to process raw data by incorporating errors analysis, 4- to illustrate processed data** relevant to the questions given in the problem statement using appropriate tools (tables, figures, etc.) ; with minor errors (25-49% achievement)	Independently and/or as a part of a team; 1- to report raw data properly, 2- to calculate measurement errors systematically, 3-to process raw data by incorporating errors analysis, 4- to illustrate processed data** relevant to the questions given in the problem statement using appropriate tools (tables, figures, etc.) ; with moderate errors (50-74% achievement)	Independently and/or as a part of a team, 1- to report raw data properly, 2- to calculate measurement errors systematically, 3-to process raw data by incorporating errors analysis, 4- to illustrate processed data** relevant to the questions given in the problem statement using appropriate tools (tables, figures, etc.); with minor/no errors (75-100% achievement)	4
PI4	Interpret Data [20%]	Inability; 1-to evaluate data, 2- to discuss data in reference to previous works/related literature (0-24% achievement)	Independently and/or as a part of a team; 1- to evaluate data, 2- to discuss data in reference to previous works/related literature; with an ordinary perspective (25-49% achievement)	Independently and/or as a part of a team; 1- to evaluate data, 2- to discuss data in reference to previous works/related literature; with a scientific perspective (50-74% achievement)	Independently and/or as a part of a team; 1-to evaluate data, 2- to discuss data in reference to previous works/related literature; with a scientific and creative perspective (75-100% achievement)	4

PI#	Performance Indicators [Weight]	Unsatisfactory	Developing	Satisfactory	Outstanding	Score
		1 Point	2 Points	3 Points	4 points	Max.
PI5	Use engineering judgement* to draw conclusions [20%]	Inability; 1-to describe the key finding(s), 2- to identify implications (effects and/or possible consequences), 3- to compose a "(1-sentence) take-home message/concluding remark" from the experimental work using engineering judgement* (0-24% achievement)	Independently and/or as a part of a team; 1- to describe the key finding(s), 2- to identify implications (effects and/or possible consequences), 3- to compose a "(1-sentence) take-home message/concluding remark" from the experimental work using engineering judgement* with an ordinary perspective (25-49% achievement)	Independently and/or as a part of a team; 1- to describe the key finding(s), 2- to identify implications (effects and/or possible consequences), 3- to compose a "(1-sentence) take-home message/concluding remark" from the experimental work using engineering judgement* with a scientific perspective (50-74% achievement)	Independently and/or as a part of a team; 1- to describe the key finding(s), 2- to identify implications (effects and/or possible consequences), 3- to compose a "(1-sentence) take-home message/concluding remark" from the experimental work using engineering judgement* with a scientific and creative perspective (75-100% achievement)	4
Overall Performance		Unsatisfactory	Developing	Satisfactory	Outstanding	TOTAL
POINTS REQUIRED		0-5 0-24%	6-10 25-49%	11-15 50-74%	16-20 75-100%	20 100%