

SP015 Rancangan Instruksional Harian

Lectures

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		1															
CHAPTER		Chapter: 1: PHYSICAL QUANTITIES AND MEASUREMENTS															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 17/07/2023 9am-10am BT1	K1	1.1a Define dimension. 1.2a Define scalar and vector quantities. 1.3a State the significant figures of a given number. 1.3e State the sources of uncertainty in the results of an experiment.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>3</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	3	ii	4	iii	4	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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Prepared by,

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 Physics Lecturer
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 Date: 13/07/2023

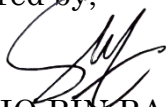
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MOHD AIMAN BIN MOHD ADLI
 Head of the Physics Unit
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 Date: 14/07/2023

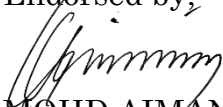
KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		2															
CHAPTER		Chapter: 2: KINEMATICS OF MOTIONS															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 24/07/2023 9am-10am BT1	K1	2.1a Define instantaneous velocity, average velocity, uniform velocity, instantaneous acceleration, average acceleration and uniform acceleration. 2.1b Interpret the physical meaning of displacement-time, velocity-time and acceleration-time graphs. Refer Equation 1.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>3</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	4	iii	3	iv	3	v	3	All objectives achieved. Students are able to understand the materials of the topic.
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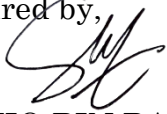
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MOHD AIMAN BIN MOHD ADLI
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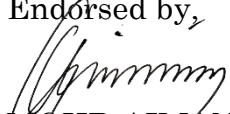
KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		3															
CHAPTER		Chapter: 2: KINEMATICS OF MOTIONS Chapter: 3: DYNAMICS OF LINEAR MOTION															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 31/07/2023 9am-10am BT1	K1	2.3a Describe projectile motion launched at an angle, as well as special cases when angle is zero 3.1a Define momentum and impulse, refer equation 2 3.2a State the principle of conservation of linear momentum.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>3</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	4	iii	4	iv	3	v	3	All objectives achieved. Students are able to understand the materials of the topic.
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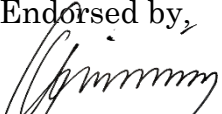
KOLEJ MATRIKULASI SARAWAK
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SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		4															
CHAPTER		Chapter: 3: DYNAMICS OF LINEAR MOTION															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 07/08/2023 9am-10am BT1	K1	3.2c Differentiate elastic and inelastic collisions. (remarks: similarities & differences) 3.3a Identify the forces acting on a body in different situations: i. Weight, W; ii. Tension, T; iii. Normal force, N; iv. Friction, f; and v. External force (pull or push), F. 3.4a State Newton's laws of motion.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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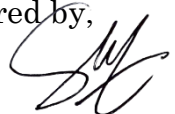
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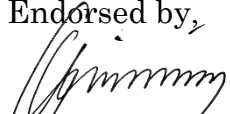
KOLEJ MATRIKULASI SARAWAK
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SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		5															
CHAPTER		Chapter: 4: WORK, ENERGY AND POWER															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 14/08/2023 9am-10am BT1	K1	4.1a State the physical meaning of dot (scalar) product for work, refer equation 4. 4.1b Define and apply work done by a constant force. 4.2a Define and use: i. Gravitational potential energy, ii. Elastic potential energy for spring, iii. Kinetic energy. (Refer Equation 5)	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>3</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	4	iv	4	v	3	All objectives achieved. Students are able to understand the materials of the topic.
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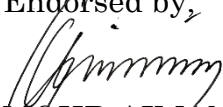
KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		6															
CHAPTER		Chapter: 4: WORK, ENERGY AND POWER Chapter: 5: CIRCULAR MOTION															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 21/08/2023 9am-10am BT1	K1	4.2b State the principle of conservation of energy. 4.2d State and apply work-energy theorem (Refer equation 5) 4.3a Define and use average power and instantaneous power (Refer Equation 6) 5.1a Define and use: i. angular displacement, θ ii. period, T iii. frequency, f iv. angular velocity, ω 5.2a Describe uniform circular motion.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>3</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	4	iv	4	v	3	All objectives achieved. Students are able to understand the materials of the topic.
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 Date: 18/08/2023

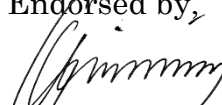
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LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		7															
CHAPTER		Chapter: 5: CIRCULAR MOTION Chapter: 6: ROTATION OF RIGID BODY															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 28/08/2023 9am-10am BT1	K1	5.3a Explain centripetal acceleration and centripetal force (Refer equation 7) 6.1a Define and use: i. angular displacement, θ ; ii. average angular velocity, ω_{av} ; iii. instantaneous angular velocity, ω ; iv. average angular acceleration, α_{av} ; and v. instantaneous angular acceleration, α . 6.2a State the physical meaning of cross (vector) product for torque (Refer equation 9) 6.2b Define and apply torque. 6.2c State conditions for equilibrium of rigid body, $\Sigma F = 0$, $\Sigma \tau = 0$	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		8															
CHAPTER		Chapter: 6: ROTATION OF RIGID BODY															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 04/09/2023 9am-10am BT1	K1	6.3a Define and use moment of inertia (Refer equation 10) 6.3d State and use net torque (Refer equation 10) 6.4a Explain and use angular momentum (Refer equation 11) 6.4b State and use principle of conservation of angular momentum.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>3</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	4	iv	4	v	3	All objectives achieved. Students are able to understand the materials of the topic.
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KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		9															
CHAPTER		Chapter: 7: OSCILLATIONS AND WAVES															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 18/09/2023 9am-10am BT1	K1	7.1a Explain SHM. 7.1d Emphasise the relationship between total SHM energy and amplitude.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>3</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	4	iv	4	v	3	All objectives achieved. Students are able to understand the materials of the topic.
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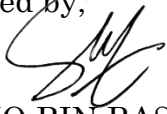
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 Date: 15/09/2023

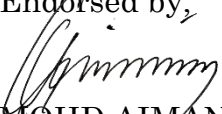
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SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		10															
CHAPTER		Chapter: 7: OSCILLATIONS AND WAVES															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 25/09/2023 9am-10am BT1	K1	7.4a Define wavelength. 7.4b Define and use wave number (Refer equation 14) 7.4d Distinguish between particle vibrational velocity and wave propagation velocity.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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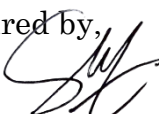
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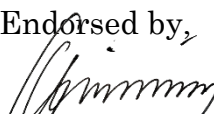
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SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		11															
CHAPTER		Chapter: 7: OSCILLATIONS AND WAVES															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 02/10/2023 9am-10am BT1	K1	7.5a State the principle of superposition of waves for the constructive and destructive interferences. 7.5c Compare between progressive waves and standing waves.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>3</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	4	iv	4	v	3	All objectives achieved. Students are able to understand the materials of the topic.
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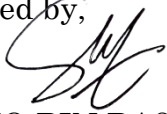
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 Head of the Physics Unit
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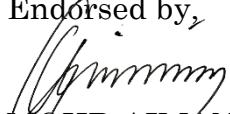
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LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		12															
CHAPTER		Chapter: 7: OSCILLATIONS AND WAVES Chapter: 8: PHYSICS OF MATTER															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 09/10/2023 9am-10am BT1	K1	7.7a State Doppler Effect for sound waves. 8.1c Explain elastic and plastic deformations.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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 Sarawak Matriculation College
 Date: 05/10/2023

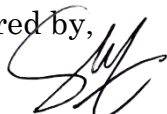
Endorsed by,


MOHD AIMAN BIN MOHD ADLI
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 Date: 06/10/2023

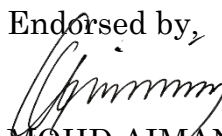
KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		13															
CHAPTER		Chapter: 8: PHYSICS OF MATTER															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 16/10/2023 9am-10am BT1	K1	8.2a Define and use Young's Modulus (Refer equation 19)	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
ITEM *Appendix	SCORE																
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iii	3																
iv	3																
v	4																

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SHAFIQ BIN RASULAN
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MOHD AIMAN BIN MOHD ADLI
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 Date: 13/10/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		14															
CHAPTER		Chapter: 8: PHYSICS OF MATTER															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 23/10/2023 9am-10am BT1	K1	8.3a Define heat conduction.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>3</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	4	iv	4	v	3	All objectives achieved. Students are able to understand the materials of the topic.
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KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		15															
CHAPTER		Chapter: 8: PHYSICS OF MATTER															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 30/10/2023 9am-10am BT1	K1	8.4a Define coefficient of linear expansion, α , area expansion, β and volume expansion, γ	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>3</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	3	ii	4	iii	4	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

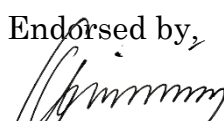
LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		16															
CHAPTER		Chapter: 9: KINETIC THEORY OF GASES AND THERMODYNAMICS															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 06/11/2023 9am-10am BT1	K1	9.1a State the assumptions of kinetic theory of gases. 9.1b Describe root mean square (rms) speed of gas molecules (Refer equation 22) 9.2a Explain and use translational kinetic energy of a molecule (Refer equation 23)	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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 Sarawak Matriculation College
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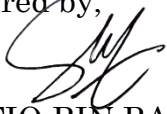


MOHD AIMAN BIN MOHD ADLI
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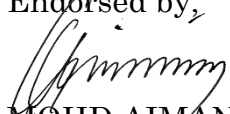
KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		17															
CHAPTER		Chapter: 9: KINETIC THEORY OF GASES AND THERMODYNAMICS															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 13/11/2023 9am-10am BT1	K1	9.2b Define degree of freedom. 9.2c Identify number of degrees of freedom, ffor monoatomic, diatomic and polyatomic gas molecules. 9.2d State the principle of equipartition of energy. 9.2e Discuss internal energy of gas.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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 Date: 09/11/2023

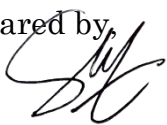
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MOHD AIMAN BIN MOHD ADLI
 Head of the Physics Unit
 Sarawak Matriculation College
 Date: 10/11/2023

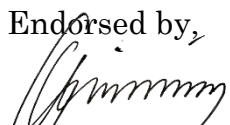
KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		18															
CHAPTER		Chapter: 9: KINETIC THEORY OF GASES AND THERMODYNAMICS															
MODE		Lecture															
CLO		CLO1: Describe basic concepts of mechanics, wave, matters, heat and thermodynamics															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLAS S	LEARNING OUTCOME	T&L STRATE GIES & TOOLS	REFLECTION	REMARKS												
Monday 20/11/2023 9am-10am BT1	K1	9.3a State the First Law of Thermodynamics (Refer equation 24) 9.4a Define the following thermodynamic processes: i. Isothermal; ii. Isochoric; iii. Isobaric and iv. Adiabatic. 9.4b Analyse P-V graph for all the thermodynamic processes.	Discussion Thought Experiments	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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 Head of the Physics Unit
 Sarawak Matriculation College
 Date: 17/11/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

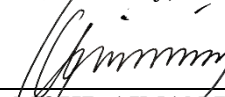
LECTURER		SHAFIQ BIN RASULAN																	
CODE / COURSE		SP015																	
WEEK		1																	
CHAPTER		Chapter: 1: PHYSICAL QUANTITIES AND MEASUREMENTS																	
MODE		Tutorial																	
CLO		CLO2: Solve problems related to mechanics, wave, matters, heat and thermodynamics																	
SLT		F2F (hour):		1	NF2F (hour):		1												
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME		T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
<div>K1T1(Tuesday); K1T2A(Tuesday); K1T2B(Tuesday)</div> <div>K1T1(18/07/2023); K1T2A(18/07/2023); K1T2B(18/07/2023)</div> <div>K1T1(9am - 10am); K1T2A(3pm - 4pm); K1T2B(10am - 11am)</div> <div>K1T1(BT3); K1T2A(BT1); K1T2B(MF)</div>	K1	1.1a) Define dimension. 1.1b) Determine the dimensions of derived quantities. 1.1c) Verify the homogeneity of equations using dimensional analysis.		<div>Discussion</div> <div>Thought Experiments</div> <div>Problem Practice</div>	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>		ITEM *Appendix	SCORE	i	4	ii	3	iii	3	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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SHAFIQ BIN RASULAN
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 Date: 13/07/2023

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MOHD AIMAN BIN MOHD ADLI
 Head of the Physics Unit
 Sarawak Matriculation College
 Date: 14/07/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

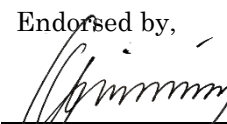
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<div><div>K1T1(Thursday); K1T2A(Wednesday); K1T2B(Wednesday)</div><div>K1T1(20/07/2023); K1T2A(19/07/2023); K1T2B(19/07/2023)</div><div>K1T1(10am -11am); K1T2A(2pm - 3pm); K1T2B(9am - 10am)</div><div>K1T1(DK1); K1T2A(BT3); K1T2B(BT3)</div></div>	K1	1.2a) Define scalar and vector quantities. 1.2b) Resolve vector into two perpendicular components (x and y axes). 1.2c) Determine resultant of vectors. (remarks: limit to three vectors only).		<div>Discussion</div> <div>Thought Experiments</div> <div>Problem Practice</div>	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>3</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>		ITEM *Appendix	SCORE	i	3	ii	4	iii	4	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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SHAFIQ BIN RASULAN
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KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

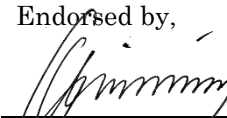
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DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME		T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
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LESSON PLAN
SEMESTER I SESSION 2023/2024

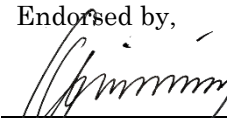
LECTURER		SHAFIQ BIN RASULAN																	
CODE / COURSE		SP015																	
WEEK		2																	
CHAPTER		Chapter: 2: KINEMATICS OF MOTIONS																	
MODE		Tutorial																	
CLO		CLO2: Solve problems related to mechanics, wave, matters, heat and thermodynamics																	
SLT		F2F (hour):		1	NF2F (hour):		1												
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME		T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
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MOHD AIMAN BIN MOHD ADLI
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 Date: 21/07/2023

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LESSON PLAN
SEMESTER I SESSION 2023/2024

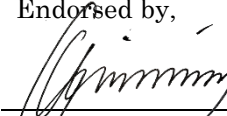
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LESSON PLAN
SEMESTER I SESSION 2023/2024

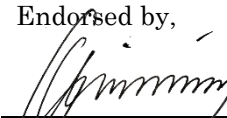
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CODE / COURSE		SP015																
WEEK		2																
CHAPTER		Chapter: 2: KINEMATICS OF MOTIONS																
MODE		Tutorial																
CLO		CLO2: Solve problems related to mechanics, wave, matters, heat and thermodynamics																
SLT		F2F (hour):		1	NF2F (hour):		1											
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Prepared by,



SHAFIQ BIN RASULAN
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 Date: 20/07/2023

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MOHD AIMAN BIN MOHD ADLI
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 Date: 21/07/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

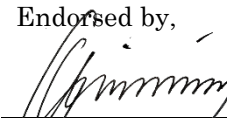
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SHAFIQ BIN RASULAN
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LESSON PLAN
SEMESTER I SESSION 2023/2024

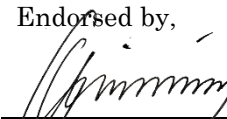
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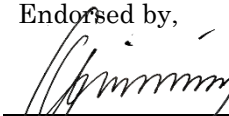
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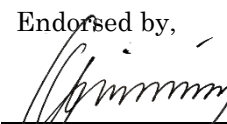
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 Date: 04/08/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

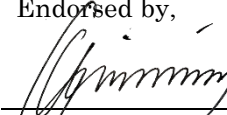
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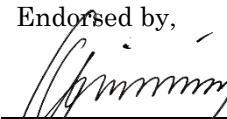
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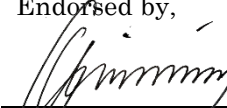
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SHAFIQ BIN RASULAN
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 Date: 11/08/2023

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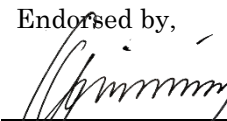
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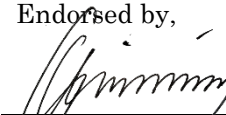
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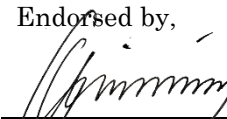
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 Date: 18/08/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
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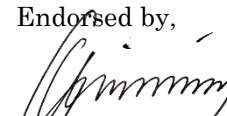
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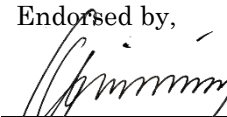
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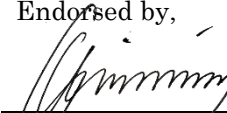
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LESSON PLAN
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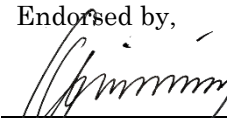
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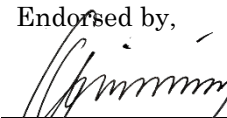
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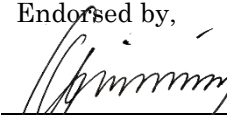
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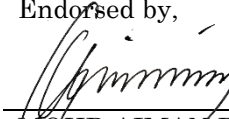
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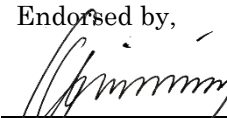
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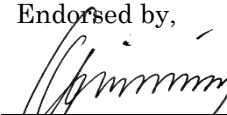
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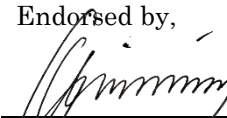
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KOLEJ MATRIKULASI SARAWAK
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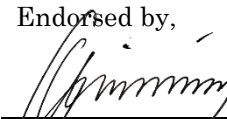
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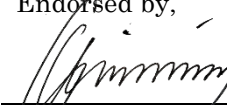
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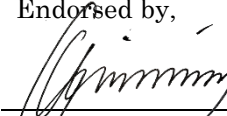
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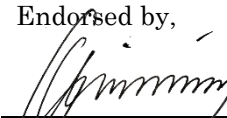
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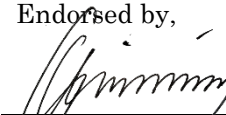
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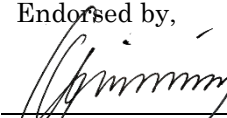
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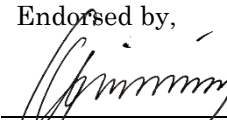
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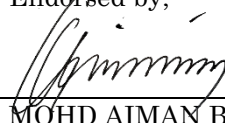
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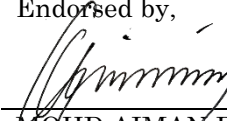
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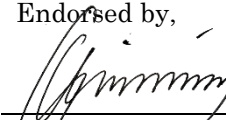
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 Date: 06/10/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

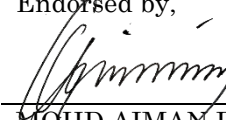
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WEEK		13																	
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MODE		Tutorial																	
CLO		CLO2: Solve problems related to mechanics, wave, matters, heat and thermodynamics																	
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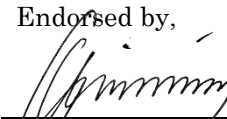
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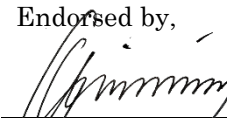
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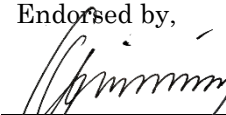
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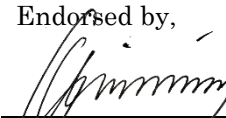
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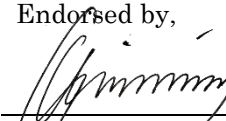
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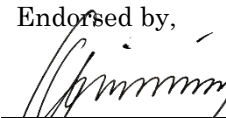
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CODE / COURSE		SP015																	
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MOHD AIMAN BIN MOHD ADLI
 Head of the Physics Unit
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 Date: 27/10/2023

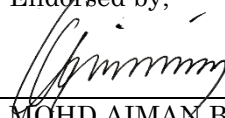
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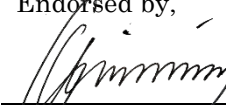
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 Date: 27/10/2023



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SLT		F2F (hour):		1	NF2F (hour):		1												
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME		T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
<div>K1T1(Tuesday); K1T2A(Tuesday); K1T2B(Tuesday)</div> <div>K1T1(07/11/2023); K1T2A(07/11/2023); K1T2B(07/11/2023)</div> <div>K1T1(9am - 10am); K1T2A(3pm - 4pm); K1T2B(10am - 11am)</div> <div>K1T1(BT3); K1T2A(BT1); K1T2B(MF)</div>	K1	8.3a) Define heat conduction. 8.3b) Solve problems related to rate of heat transfer through a cross-sectional area (remarks: maximum two insulated objects in series) (Refer Equation 20) 8.3c) Analyse graphs of temperature-distance (T-L) for heat conduction through insulated and non-insulated rods, maximum two rods in series.		<div>Discussion</div> <div>Thought Experiments</div> <div>Problem Practice</div>	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>		ITEM *Appendix	SCORE	i	4	ii	4	iii	3	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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iii	3																		
iv	4																		
v	4																		

Prepared by,

SHAFIQ BIN RASULAN
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 Date: 02/11/2023

Endorsed by,

MOHD AIMAN BIN MOHD ADLI
 Head of the Physics Unit
 Sarawak Matriculation College
 Date: 03/11/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

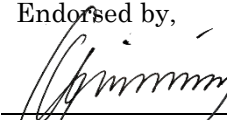
LECTURER		SHAFIQ BIN RASULAN																	
CODE / COURSE		SP015																	
WEEK		16																	
CHAPTER		Chapter: 8: PHYSICS OF MATTER																	
MODE		Tutorial																	
CLO		CLO2: Solve problems related to mechanics, wave, matters, heat and thermodynamics																	
SLT		F2F (hour):		1	NF2F (hour):		1												
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME		T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
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SEMESTER I SESSION 2023/2024

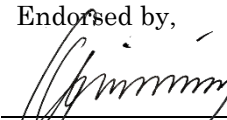
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LESSON PLAN
SEMESTER I SESSION 2023/2024

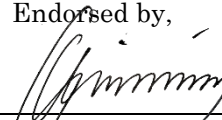
LECTURER		SHAFIQ BIN RASULAN																	
CODE / COURSE		SP015																	
WEEK		17																	
CHAPTER		Chapter: 9: KINETIC THEORY OF GASES AND THERMODYNAMICS																	
MODE		Tutorial																	
CLO		CLO2: Solve problems related to mechanics, wave, matters, heat and thermodynamics																	
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LESSON PLAN
SEMESTER I SESSION 2023/2024

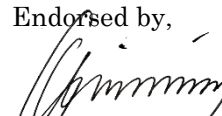
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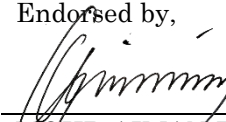
LECTURER		SHAFIQ BIN RASULAN																	
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 Date: 10/11/2023

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LESSON PLAN
SEMESTER I SESSION 2023/2024

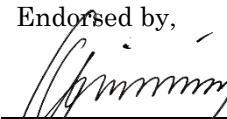
LECTURER		SHAFIQ BIN RASULAN																	
CODE / COURSE		SP015																	
WEEK		18																	
CHAPTER		Chapter: 9: KINETIC THEORY OF GASES AND THERMODYNAMICS																	
MODE		Tutorial																	
CLO		CLO2: Solve problems related to mechanics, wave, matters, heat and thermodynamics																	
SLT		F2F (hour):		1	NF2F (hour):		1												
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME		T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
<div><div>K1T1(Tuesday); K1T2A(Tuesday); K1T2B(Tuesday)</div><div>K1T1(21/11/2023); K1T2A(21/11/2023); K1T2B(21/11/2023)</div><div>K1T1(9am - 10am); K1T2A(3pm - 4pm); K1T2B(10am - 11am)</div><div>K1T1(BT3); K1T2A(BT1); K1T2B(MF)</div></div>	K1	9.3a) State the First Law of Thermodynamics (Refer Equation 24) 9.3b) Solve problem related to First Law of Thermodynamics.		<div>Discussion</div> <div>Thought Experiments</div> <div>Problem Practice</div>	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>		ITEM *Appendix	SCORE	i	4	ii	4	iii	3	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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 Date: 17/11/2023

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LESSON PLAN
SEMESTER I SESSION 2023/2024

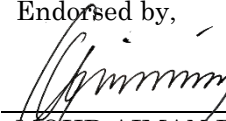
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<div>K1T1(Thursday); K1T2A(Wednesday); K1T2B(Wednesday)</div> <div>K1T1(23/11/2023); K1T2A(22/11/2023); K1T2B(22/11/2023)</div> <div>K1T1(10am -11am); K1T2A(2pm - 3pm); K1T2B(9am - 10am)</div> <div>K1T1(DK1); K1T2A(BT3); K1T2B(BT3)</div>	K1	9.4a) Define the following thermodynamic processes – Isothermal, Isochoric, Isobaric and Adiabatic. 9.4b) Analyse P-V graph for all the thermodynamic processes.		<div>Discussion</div> <div>Thought Experiments</div> <div>Problem Practice</div>	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>3</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>		ITEM *Appendix	SCORE	i	3	ii	3	iii	4	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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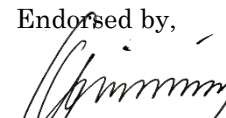
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 Date: 16/11/2023

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 Head of the Physics Unit
 Sarawak Matriculation College
 Date: 17/11/2023

Labs

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		3															
CHAPTER		Chapter 1: Physical Quantities And Measurements															
MODE		Laboratory/ Physics Practicals															
CLO		CLO3: Apply the appropriate scientific laboratory skills in physics experiments															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME	T&L STRATEGIES & TOOLS	REFLECTION	REMARKS												
Wednesday (K1T1) Thursday (K1T2) 02/08/2023(K1T1) 03/08/2023(K1T2) 1100 - 1300(K1T1) 1400 - 1500(K1T2) Physics Lab (Makmal Fizik)	K1	Experiment 1: Measurement and Safety 1.3g: Measure and determine the uncertainty of physical quantities.(Experiment I : Measurement and uncertainty)	Laboratory Work	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>3</td></tr><tr><td>ii</td><td>3</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	3	ii	3	iii	4	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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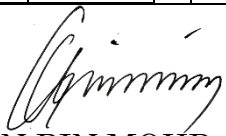
Endorsed by,

MOHD AIMAN BIN MOHD ADLI
 Head of the Physics Unit
 Sarawak Matriculation College
 Date: 28/07/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024


LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		4															
CHAPTER		Chapter 2: Kinematics Of Motions															
MODE		Laboratory/ Physics Practicals															
CLO		CLO3: Apply the appropriate scientific laboratory skills in physics experiments															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME	T&L STRATEGIES & TOOLS	REFLECTION	REMARKS												
Wednesday (K1T1) Thursday (K1T2) 09/08/2023(K1T1) 10/08/2023(K1T2) 1100 - 1300(K1T1) 1400 - 1500(K1T2) Physics Lab (Makmal Fizik)	K1	Experiment 2: Free Fall & Projectile Motion 2.3c: Determine the acceleration due to gravity, g using free fall and projectile motion. (Experiment 2: Free fall and projectile motion)	Laboratory Work	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	4	ii	4	iii	4	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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iv	3																
v	4																


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 Date: 04/08/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024


LECTURER		SHAFIQ BIN RASULAN																
CODE / COURSE		SP015																
WEEK		6																
CHAPTER		Chapter 4: Work, Energy And Power																
MODE		Laboratory/ Physics Practicals																
CLO		CLO3: Apply the appropriate scientific laboratory skills in physics experiments																
SLT		F2F (hour):	1	NF2F (hour):	1													
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME	T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
Wednesday (K1T1) Thursday (K1T2) 23/08/2023(K1T1) 24/08/2023(K1T2) 1100 - 1300(K1T1) 1400 - 1500(K1T2) Physics Lab (Makmal Fizik)	K1	Experiment 3: Energy 4.3b: Verify the law of conservation of energy.(Experiment 3: Energy)	Laboratory Work	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>		ITEM *Appendix	SCORE	i	4	ii	4	iii	4	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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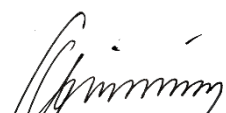
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KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024


LECTURER		SHAFIQ BIN RASULAN																
CODE / COURSE		SP015																
WEEK		7																
CHAPTER		Chapter 6: Rotation Of Rigid Body																
MODE		Laboratory/ Physics Practicals																
CLO		CLO3: Apply the appropriate scientific laboratory skills in physics experiments																
SLT		F2F (hour):	1	NF2F (hour):	1													
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME	T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
Wednesday (K1T1) Thursday (K1T2) 30/08/2023(K1T1) 31/08/2023(K1T2) 1100 - 1300(K1T1) 1400 - 1500(K1T2) Physics Lab (Makmal Fizik)	K1	Experiment 4: Rotational Motion of Rigid Body 6.3c: Determine the moment of inertia of a flywheel. (Experiment 4: Rotational motion of rigid body)	Laboratory Work	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>4</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>4</td></tr><tr><td>iv</td><td>3</td></tr><tr><td>v</td><td>4</td></tr></table>		ITEM *Appendix	SCORE	i	4	ii	4	iii	4	iv	3	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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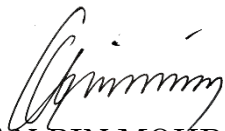
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 Date: 25/08/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024


LECTURER		SHAFIQ BIN RASULAN															
CODE / COURSE		SP015															
WEEK		9															
CHAPTER		Chapter 7: Oscillations And Waves															
MODE		Laboratory/ Physics Practicals															
CLO		CLO3: Apply the appropriate scientific laboratory skills in physics experiments															
SLT		F2F (hour):	1	NF2F (hour):	1												
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME	T&L STRATEGIES & TOOLS	REFLECTION	REMARKS												
Wednesday (K1T1) Thursday (K1T2) 20/09/2023(K1T1) 21/09/2023(K1T2) 1100 - 1300(K1T1) 1400 - 1500(K1T2) Physics Lab (Makmal Fizik)	K1	Experiment 5: Simple Harmonic Motion 7.3b: Determine the acceleration, g due to gravity using simple pendulum. (Experiment 5: SHM) 7.3c: Investigate the effect of large amplitude oscillation to the accuracy of acceleration due to gravity, g obtained from the experiment. (Experiment 5: SHM)	Laboratory Work	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>3</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>	ITEM *Appendix	SCORE	i	3	ii	4	iii	3	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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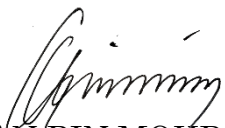
Prepared by, 
 SHAFIQ BIN RASULAN
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 Date: 14/09/2023

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 MOHD AIMAN BIN MOHD ADLI
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 Date: 15/09/2023

KOLEJ MATRIKULASI SARAWAK
LESSON PLAN
SEMESTER I SESSION 2023/2024

LECTURER		SHAFIQ BIN RASULAN																
CODE / COURSE		SP015																
WEEK		11																
CHAPTER		Chapter 7: Oscillations And Waves																
MODE		Laboratory/ Physics Practicals																
CLO		CLO3: Apply the appropriate scientific laboratory skills in physics experiments																
SLT		F2F (hour):	1	NF2F (hour):	1													
DAY DATE TIME VENUE	CLASS	LEARNING OUTCOME	T&L STRATEGIES & TOOLS	REFLECTION		REMARKS												
Wednesday (K1T1) Thursday (K1T2) 04/10/2023(K1T1) 05/10/2023(K1T2) 1100 - 1300(K1T1) 1400 - 1500(K1T2) Physics Lab (Makmal Fizik)	K1	Experiment 6: Standing Waves 7.6c: Investigate standing wave formed in a stretched string. (Experiment 6: Standing waves) 7.6d: Determine the mass per unit length of the string.(Experiment 6: Standing waves)	Laboratory Work	<table><tr><td>ITEM *Appendix</td><td>SCORE</td></tr><tr><td>i</td><td>3</td></tr><tr><td>ii</td><td>4</td></tr><tr><td>iii</td><td>3</td></tr><tr><td>iv</td><td>4</td></tr><tr><td>v</td><td>4</td></tr></table>		ITEM *Appendix	SCORE	i	3	ii	4	iii	3	iv	4	v	4	All objectives achieved. Students are able to understand the materials of the topic.
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 Sarawak Matriculation College
 Date: 29/09/2023

Equation No	LO	Equations
1	2.2	$v = u + at; v^2 = u^2 + 2as; s = ut + \frac{1}{2}at^2; s = \frac{1}{2}(u + v)t$
2	3.1	$J = F\Delta t; J = \Delta p = m(v - u)$
3	3.3	$f_s \leq \mu_s N; f_k = \mu_k N$
4	4.1	$W = \vec{F} \cdot \vec{s} = Fs \cos \theta$
5	4.2	$U = mgh; U_s = \frac{1}{2}kx^2 = \frac{1}{2}Fx; K = \frac{1}{2}mv^2; W = \Delta K$
6	4.3	$P_{av} = \frac{\Delta W}{\Delta t}; P = \vec{F} \cdot \vec{v}$
7	5.3	$a_c = \frac{v^2}{r} = r\omega^2 = v\omega; F_c = \frac{mv^2}{r} = mr\omega^2 = mv\omega$
8	6.1	$s = r\theta; v = r\omega; a_t = r\alpha; a_c = r\omega^2 = \frac{v^2}{r}$ $\omega = \omega_o + \alpha t; \theta = \omega_o t + \frac{1}{2}\alpha t^2; \omega^2 = \omega_o^2 + 2\alpha\theta; \theta = \frac{1}{2}(\omega_o + \omega)t$
9	6.2	$ \vec{\tau} = rF \sin \theta; \Sigma F = \Sigma \tau = 0$
10	6.3	$I = \Sigma mr^2; \Sigma \tau = I\alpha$
11	6.4	$L = I\omega$
12	7.1	$y = A \sin(\omega t); v = \omega A \cos(\omega t) = \pm \omega \sqrt{A^2 - y^2}$ $a = -\omega^2 A \sin(\omega t) = -\omega^2 y; K = \frac{1}{2}m\omega^2(A^2 - y^2); U = \frac{1}{2}m\omega^2 y^2$
13	7.3	$T = 2\pi \sqrt{\frac{l}{g}}; T = 2\pi \sqrt{\frac{m}{k}}$
14	7.4	$k = \frac{2\pi}{\lambda}; y(x, t) = A \sin(\omega t \pm kx); v_y = A\omega \cos(\omega t \pm kx); v = f\lambda$
15	7.5	$y = 2A \cos(kx) \sin(\omega t)$
16	7.6	$f_n = \frac{nv}{2L}; f_n = \frac{nv}{4L}; v = \sqrt{\frac{T}{\mu}}$
17	7.7	$f_a = \left(\frac{v \pm v_o}{v \mp v_s} \right) f$
18	8.1	$\delta = \frac{F}{A}; \varepsilon = \frac{\Delta L}{L_o}$
19	8.2	$Y = \frac{\delta}{\varepsilon}; U = \frac{1}{2}F\Delta L; \frac{U}{V} = \frac{1}{2}\delta\varepsilon$
20	8.3	$\frac{Q}{t} = -kA \left(\frac{\Delta T}{L} \right)$
21	8.4	$\Delta L = \alpha L_o \Delta T; \Delta A = \beta A_o \Delta T; \Delta V = \gamma V_o \Delta T; \beta = 2\alpha; \gamma = 2\alpha$
22	9.1	$v_{rms} = \sqrt{\langle v^2 \rangle}; v_{rms} = \sqrt{\frac{2kT}{m}} = \sqrt{\frac{2RT}{M}}$ $PV = \frac{1}{3}Nmv_{rms}^2; P = \frac{1}{3}\rho v_{rms}^2$
23	9.2	$K_{tr} = \frac{3}{2} \left(\frac{R}{N_A} \right) T = \frac{3}{2}kT; U = \frac{1}{2}fNkT$
24	9.3	$\Delta U = Q - W$
25	9.5	$W = nRT \ln \left(\frac{V_f}{V_i} \right) = nRT \ln \left(\frac{P_i}{P_f} \right)$ $W = \int P dV = P(V_f - V_i); W = \int P dV = 0$