PRO FORMA KURSUS
COURSE PRO FORMA

Semester 2 Sesi 2023/2024

1. Maklumat Kursus / *Course Info*

Nama Kursus: ***Course Name:***	**Mekanik / *Mechanics***		
Kod Kursus: ***Course Code:***	**SFT3033**	**Nilai Kredit:** ***Credit Value:***	3

2. Sinopsis / *Synopsis*

Kursus mekanik awalan berasaskan kalkulus ini memperkenalkan konsep asas dalam mekanik iaitu seperti gerakan satu dimensi, hukum Gerakan Newton, kerja, tenaga kinetik dan keupayaan, momentum, impuls, gerakan putaran, kekenyalan dan mekanik bendalir.

This is a calculus based elementary mechanics which introduces fundamental concept in mechanics as applied to one dimension motion, Newton's laws of motion, work, kinetic and potential energy, momentum, impulse, rotational motion, elasticity and fluid mechanics.

3. Nama Staff Akademik / *Name(s) of Academic Staff*

1. Dr. Izan Roshawaty binti Mustapa
2. Encik Roszairi bin Haron
3. Profesor Madya Dr. Faridah Lisa binti Supian

4. Semester dan Tahun / *Semester and Year Offered*

Semester: ***Semester:***	1	**Tahun:** ***Year:***	1

5. Prasyarat (jika ada) / *Prerequisite (if any)*

Tiada / *None*

6. Hasil Pembelajaran Kursus / *Course Learning Outcomes (CLO)*

CLO1	Mengaplikasikan konsep mekanik untuk menyelesaikan masalah. (C3, PLO2) *Apply mechanics concept to solve the problem. (C3, PLO2)*	C3

CLO2	Menulis laporan saintifik berdasarkan tugasan amali. (P3, PLO3) *Write scientific reports based on practical assignments. (P3, PLO3)*	P3
CLO3	Menunjukkan kemahiran bekerja dalam kumpulan untuk menyelesaikan tugasan yang diberikan. (A3, PLO4) *Demonstrate teamwork skills in solving the given task. (A3, PLO4)*	A3
CLO4	Mengaplikasikan kemahiran numerasi dalam penyelesaian masalah mekanik. (C3, PLO7) *Apply numeracy skills in solving mechanics problem. (C3, PLO7)*	C3

7. Pemetaan Hasil Pembelajaran Kursus kepada Hasil Pembelajaran Program / *Mapping of the Course to the Programme Learning Outcomes*

CLO	Program Learning Outcomes (PLO)											Teaching Methods	Assessment
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11		
CLO1		✔										• Kuliah / *Lecture*	• Peperiksaan Akhir / *Final Examination*
CLO2			✔									• Praktikal / *Practical*	• Laporan Praktikal / *Practical Report*
CLO3				✔								• Projek / *Project*	• Tugasan (Berkumpulan) / *Assignment (Group)*
CLO4							✔					• Kuliah / *Lecture* • Pembelajaran Teradun / *Blended Learning*	• Ujian / *Test* • Kuiz / *Quiz*

(Deskripsi ini mesti dibaca bersama dengan Standard 2.1.2, 2.2.1 dan 2.2.2 di Area 2 - muka surat 16 & 18 / This description must be read together with Standards 2.1.2, 2.2.1 and 2.2.2 in Area 2 - pages 16 & 18

Hasil Pembelajaran Program / Programme Learning Outcomes	
PLO1	Menerangkan pengetahuan teoretikal dan teknikal dalam bidang pendidikan dan fizik. [MQF1] *Describe theoretical and technical knowledge in education and physics [MQF1]*
PLO2	Mempamerkan keupayaan intelektual melalui aplikasi kemahiran berfikir berkaitan bidang pendidikan dan fizik.[MQF2] *Demonstrate intellectual ability through the application of thinking skills related to the field of education and physics . [MQF2]*
PLO3	Mengaplikasikan kaedah dan kemahiran praktikal yang sesuai bagi pelaksanaan tugasan dalam bidang pendidikan dan fizik. [MQF3A] *Apply appropriate methods and practical skills for the implementation of tasks in the field of education and physics . [MQF3A]*
PLO4	Berinteraksi secara efektif dengan menggunakan kemahiran interpersonal yang berkesan. [MQF3B] *Interact effectively using effective interpersonal skills. [MQF3B]*
PLO5	Berkomunikasi secara bertulis dan lisan melalui pelbagai media penyampaian. [MQF3C] *Communicate in writing and orally through a variety of delivery media. [MQF3C]*

PLO6	Mengintegrasikan pelbagai sumber media dan teknologi digital bagi menyelesaikan tugasan. [MQF3D] *Integrate various media sources and digital technologies to complete tasks. [MQF3D]*
PLO7	Mengaplikasikan kemahiran numerasi dalam penyelesaian masalah. [MQF3E] *Apply numeracy skills in problem solving. [MQF3E]*
PLO8	Menunjukkan kepimpinan, sikap berautonomi dan kebertanggungjawaban pada pelbagai peringkat pengurusan. [MQF3F] *Demonstrates leadership, autonomy and accountability at various levels of management. [MQF3F]*
PLO9	Mempamerkan kemajuan diri menerusi pembelajaran berterusan dan pembangunan profesional secara proaktif. [MQF4A] *Demonstrate self -improvement through continuous learning and professional development proactively. [MQF4A]*
PLO10	Mempamerkan pemikiran dan kemahiran keusahawanan dalam pengurusan projek. [MQF4B] *Demonstrate entrepreneurial thinking and skills in project management. [MQF4B]*
PLO11	Mematuhi kod etika dalam persekitaran sosial dan amalan professional. [MQF5] *Adhere to a code of ethics in social environment and professional practice. [MQF5]*

8. Kemahiran yang boleh dipindahkan (jika berkaitan) / *Transferable Skills (if applicable)*

1	Kemahiran Penyelesaian Masalah *Problem Solving Skills*
2	Kemahiran Praktikal dan Penyiasatan *Practical and Investigation Skills*
3	Kemahiran Kerja Berpasukan *Team Work Skills*

9. Pengagihan Jam Pembelajaran Pelajar / *Distribution of Student Learning Time (SLT)*

Week	Course Content Outline	CLO				Conventional						Online				SLT
						Guided Learning (F2F)				Guided Learning (NF2F)	Independent Learning (NF2F)	Learning Material		Activities		
		CLO1	CLO2	CLO3	CLO4	L	T	P	O			Guided	Non Guided	Guided	Non Guided	
1-2	**Unit, Kuantiti Fizikal** Ukuran piawai dan Unit, Konsistensi dan Penukaran Unit ***Units, Physical Quantities*** *Standard and Units, Unit Consistency and Conversion*	✔		✔	✔	0	0	0	0	0	0	4	3	1	3	11

3-4	**Gerakan Pada Garis Lurus** Sesaran, Masa dan Halaju, Gerakan dengan Pecutan Seragam, Jatuh Bebas, Gerakan Projektil ***Motion Along a Straight Line*** *Displacement, Time and Velocity, Motion with Constant Acceleration, Free Fall, Projectile Motion*	✔	✔	✔	✔	0	0	0	0.5	0	0.5	4	3	1	4	13
5-6	**Hukum Gerakan Newton** Hukum Newton Pertama, Hukum Newton Kedua, Hukum Newton Ketiga, Gambar Rajah Jasad Bebas, Mengaplikasikan Hukum Newton ***Newton's Laws of Motion*** *Newton's First Law, Newton's Second Law, Newton's Third Law, Free-body Diagrams, Applying Newton's Law*	✔	✔	✔	✔	4	0	3	0.5	0	7	0	0	0	1	15.5
7-8	**Kerja dan Tenaga Mekanik** Kerja, Tenaga Kinetik, Kuasa, Tenaga Keupayaan dan Keabadian Tenaga ***Work and Mechanical Energy*** *Work, Kinetic Energy, Power, Potential Energy and Energy Conservation*	✔	✔	✔	✔	4	0	3	0.5	0	7	0	0	0	1	15.5
9-10	**Momentum, Impuls dan Perlanggaran** Momentum, Impuls, Keabadian Momentum ***Momentum, Impulse, and Collisions*** *Momentum, Impulse, Conservation of Momentum*	✔	✔	✔	✔	5	0	0	0.5	0	6	0	0	0	1	12.5

11-12	**Gerakan Putaran** Sesaran Sudut, Halaju Sudut, Pecutan Sudut, Putaran dengan Pecutan Sudut, Tenaga dalam Gerakan Putaran, Teorem Paksi Selari, Tork, Putaran Jasad Tegar dengan Paksi Bergerak, Kerja dan Kuasa dalam Gerakan Putaran, Keabadian Momentum Sudut ***Rotational Motion*** *Angular Displacement, Angular Velocity, Angular Acceleration, Rotation with Constant Angular Acceleration, Energy in Rotational Motion, Parallel-Axis Theorem, Torque, Rigid-body Rotation about a Moving Axis, Work and Power in Rotational Motion, Angular Momentum, Conservation of Angular Momentum*	✔	✔	✔	✔	4	0	0	0.5	0	4.5	0	0	0	1	10
13-14	**Mekanik Bendalir** Ketumpatan, Tekanan dalam Bendalir, Keapungan, Aliran Bendalir, Persamaan Bernoulli ***Fluid Mechanics*** *Density, Pressure in a Fluid, Buoyancy, Fluid Flow, Bernoulli's Equation*	✔	✔	✔	✔	4	0	0	0.5	0	4.5	0	0	0	1	10
					TOTAL	**21**	**0**	**6**	**3**	**0**	**29.5**	**8**	**6**	**2**	**12**	**87.5**

Continuous Assessment		**Percentage (%)**	**Conventional**		**Online**	**SLT**
			F2F	**NF2F**		
1	Ujian (*Test*)	20	1.5	1	0	2.5
2	Kuiz (*Quiz*)	5	1	1	4	6
3	Laporan Praktikal (*Practical Report*)	20	6	6	0	12
4	Tugasan (Berkumpulan) (*Assignment (Group)*)	15	0	0	4	4
	TOTAL	**60**	**8.5**	**8**	**8**	**24.5**

Final Assessment		Percentage (%)	Conventional		Online	SLT
			F2F	NF2F		
1	Peperiksaan Akhir (*Final Examination*)	40	2	6	0	8
TOTAL		**40**	**2**	**6**	**0**	**8**
					GRAND TOTAL	**120**

10. Keperluan Khas / *Special Requirement*

Tiada

None

11. Rujukan / *Reference*

Main reference:

Young, H.D. & Freedman, R. A. (2016). University physics with modern physics. (14th ed). Singapore: Pearson Addison Wesley.

Additional Reference:

Giancoli, D.C. (2013). Physics for scientists and engineers with modern physics. (7th ed). Upper Saddle River: Pearson/Prentice Hall.

Knight, R.D. (2013). Physics for scientists and engineers with modern physics: A strategic approach. San Francisco: Wesley. QC23.2 K65 2013.

Serway R.A. & Jewitt, J.W. (2013). Physics for scientist and engineers. (9th ed). Belmont, C.A.: brooks/Cole.

Tipler, P.A. & Mosca, G. (2008). Physics for scientists and engineers with modern physics. (6th ed). New York: W. H. Freeman and Company.

Wilson, J.D., Buffa, A.J. & Bo Lou. (2007). College physics. (6th ed). New Jersey: Prentice Hall

12. Maklumat Tambahan Lain / *Others Additional Information*

Tiada / *None*

13. Pengesahan / *Verification*

	Disediakan/ Dikemaskini oleh: *Prepared/ Updated by:*	Disemak oleh: *Checked by:*

Nama: ***Name:***	ENCIK ROSZAIRI BIN HARON	DR. MOHD FAUDZI BIN UMAR
Jawatan: ***Designation:***	Penyelaras Kursus *Course Coordinator*	KETUA JABATAN
Tarikh: ***Date:***	24 MARCH 2024	24 MARCH 2024

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