

PRO FORMA KURSUS COURSE PRO FORMA

Semester 2 Sesi 2023/2024

1. Maklumat Kursus / Course Info

Nama Kursus: Course Name:	Getaran, Gelombang dan Optik / <i>Vibrations, Waves and Optics</i>		
Kod Kursus: Course Code:	SFT3023	Nilai Kredit: Credit Value:	3

2. Sinopsis / Synopsis

Kursus ini meliputi konsep getaran, gelombang dan optik seperti gerakan harmonik ringkas, ayunan teredam, ayunan paksa, gelombang mekanik dan gelombang elektromagnet. Sifat gelombang seperti pembiasan, penyebaran, penyerakan, pengutuban, interferens dan pembelauan juga dibincangkan. Perbincangan dilanjutkan ke kegunaan konsep dalam peralatan optik seperti mikroskop, teleskop dan saput tipis.

This course covers vibrations, waves and optics concepts such as simple harmonic motion, damped oscillations, forced oscillations, mechanical waves and electromagnetic waves. The nature of waves including refraction, dispersion, scattering, polarization, interference and diffraction are also discussed. Discussion are extended to the application of the concepts in optical instruments such as microscope, telescope and thin film.

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

1. Puan Mazlina binti Mat Darus
2. Prof. Madya Ts. Dr. Shahrul Kadri bin Ayop
3. Dr. Rosazley bin Ramly

4. Semester dan Tahun / Semester and Year Offered

Semester: Semester:	2	Tahun: Year:	1
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5. Prasyarat (jika ada) / Prerequisite (if any)

Tiada / None

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

CLO1	Mengenalpasti konsep getaran, gelombang dan optik yang terpakai pada stiuasi yang diberi. (C2, PLO1) <i>Recognize concepts in vibrations, waves and optics applicable for given phenomena. (C2, PLO1)</i>	C2
CLO2	Menyelesaikan masalah kualitatif dan kuantitatif fizik berkaitan getaran, gelombang dan optik. (C4, PLO2) <i>Solve qualitative and quantitative physics problem related to vibrations, waves and optics. (C4, PLO2)</i>	C4
CLO3	Menulis laporan saintifik berdasarkan tugas amali. (P3, PLO3) <i>Write scientific reports based on practical assignments. (P3, PLO3)</i>	P3
CLO4	Memberi maklum balas aktif melalui komunikasi lisan dan bukan lisan berkaitan kandungan kursus dalam sesi pembelajaran. (A2, PLO9) <i>Response actively through verbal and non-verbal communication related to the course content in the learning session. (A2, PLO9)</i>	A2

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	✓											- e-Pembelajaran / <i>e-Learning</i> - Perbincangan / <i>Discussion</i> - Kuliah / <i>Lecture</i>	- Ujian / <i>Test</i> - Peperiksaan Akhir / <i>Final Examination</i>
CLO2		✓										- e-Pembelajaran / <i>e-Learning</i> - Perbincangan / <i>Discussion</i> - Kuliah / <i>Lecture</i>	- Ujian / <i>Test</i> - Peperiksaan Akhir / <i>Final Examination</i>
CLO3			✓									- e-Pembelajaran / <i>e-Learning</i> - Praktikal / <i>Practical</i>	Penulisan Laporan / <i>Report Writing</i>
CLO4									✓			- e-Pembelajaran / <i>e-Learning</i> - Perbincangan / <i>Discussion</i> - Kuliah / <i>Lecture</i>	Lain-lain / <i>Others</i>

(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] <i>Describe theoretical and technical knowledge in education and physics [MQF1]</i>
PLO2	Mempamerkan keupayaan intelektual melalui aplikasi kemahiran berfikir berkaitan bidang pendidikan dan fizik.[MQF2] <i>Demonstrate intellectual ability through the application of thinking skills related to the field of education and physics . [MQF2]</i>

PLO3	Mengaplikasikan kaedah dan kemahiran praktikal yang sesuai bagi pelaksanaan tugas dalam bidang pendidikan dan fizik. [MQF3A] <i>Apply appropriate methods and practical skills for the implementation of tasks in the field of education and physics . [MQF3A]</i>
PLO4	Berinteraksi secara efektif dengan menggunakan kemahiran interpersonal yang berkesan. [MQF3B] <i>Interact effectively using effective interpersonal skills. [MQF3B]</i>
PLO5	Berkomunikasi secara bertulis dan lisan melalui pelbagai media penyampaian. [MQF3C] <i>Communicate in writing and orally through a variety of delivery media. [MQF3C]</i>
PLO6	Mengintegrasikan pelbagai sumber media dan teknologi digital bagi menyelesaikan tugas. [MQF3D] <i>Integrate various media sources and digital technologies to complete tasks. [MQF3D]</i>
PLO7	Mengaplikasikan kemahiran numerasi dalam penyelesaian masalah. [MQF3E] <i>Apply numeracy skills in problem solving. [MQF3E]</i>
PLO8	Menunjukkan kepimpinan, sikap berautonomi dan kebertanggungjawaban pada pelbagai peringkat pengurusan. [MQF3F] <i>Demonstrates leadership, autonomy and accountability at various levels of management. [MQF3F]</i>
PLO9	Mempamerkan kemajuan diri menerusi pembelajaran berterusan dan pembangunan profesional secara proaktif. [MQF4A] <i>Demonstrate self-improvement through continuous learning and professional development proactively. [MQF4A]</i>
PLO10	Mempamerkan pemikiran dan kemahiran keusahawanan dalam pengurusan projek. [MQF4B] <i>Demonstrate entrepreneurial thinking and skills in project management. [MQF4B]</i>
PLO11	Mematuhi kod etika dalam persekitaran sosial dan amalan profesional. [MQF5] <i>Adhere to a code of ethics in social environment and professional practice. [MQF5]</i>

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

1	Penyediaan dokumen digital berformat <i>Formatted digital document preparation</i>
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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	
1-3	<u>Gerakan Berkala & Gelombang Mekanik</u> Gerakan Harmonik Ringkas, Ayunan Teredam, Ayunan Paksa Jenis, Penyataan Bermatematik, Interferens, Gelombang Pegun pada Tetali <u>Periodic Motion & Mechanical Wave</u> Simple Harmonic Motion, Damped Oscillation, Forced Oscillation Types, Mathematical Description, Interference, Standing Wave on String	✓	✓		✓	0	0	0	0	0	5	9	2	0	2	18
4	<u>Tugasan Praktikal 1</u> Pelaksanaan tugas praktikal untuk penyediaan laporan berformat digital. <u>Practical Assignment 1</u> Performing practical assignment to prepare a digital formatted writing report.			✓	✓	0	0	2	0	0	2	0	1	0	0	5
5 & 6	<u>Bunyi dan Gelombang Elektromagnet</u> Harmonik Bunyi, Kesan Doppler Gelombang EM Sinusoid, Spektrum, Penambahan dan Penolakan Cahaya <u>Sound & Electromagnetic Wave</u> Sound Harmonics, Doppler Effect Sinusoidal EM Wave, Spectrum, Addition and Subtraction of Light	✓	✓		✓	0	0	0	6	0	4	0	2	0	0	12

7	Tugas Praktikal 2 Pelaksanaan tugas praktikal untuk penyediaan laporan berformat digital. Practical Assignment 2 Performing practical assignment to prepare a digital formatted writing report.			✓	✓	0	0	2	0	0	2	0	1	0	0	5
8	Sifat Gelombang bagi Cahaya Pantulan dan Pembiasan Gelombang, Penyebaran Pengutuban, Penyerakan, Prinsip Huygens The Wave Nature of Light Wave Reflection and Refraction, Dispersion, Polarisation, Scattering, Huygens' Principle	✓	✓		✓	0	0	0	6	0	4	0	2	0	0	12
9	Tugas Praktikal 3 Pelaksanaan tugas praktikal untuk penyediaan laporan berformat digital. Practical Assignment 3 Performing practical assignment to prepare a digital formatted writing report.			✓	✓	0	0	2	0	0	2	0	1	0	0	5
10 - 12	Optik Geometri & Instrumen Optik Pembiasan dan Pantulan Sinar pada Permukaan Satah dan Sfera, Cermin, Kanta Mata, Kanta Pembesar, Mikroskop, Teleskop Geometric Optics & Optical Instruments Ray Refraction and Reflection on a Plane and Spherical Surfaces, Mirror, Lenses Eye, Simple Magnifier, Microscope, Telescope	✓	✓	✓	✓	0	0	0	9	0	6	0	3	0	0	18
13 & 14	Interferens dan Pembelauan Interferens Dua Sumber, Saput Tipis Ujikaji Dwicelah Young, Pembelauan Celah Tunggal, Pembelauan Celah Berbilang Interference and Diffraction Two-Source Inteference, Thin Film Young's Double Slit Experiment, Single Slit Diffraction, Multiple Slit Diffraction	✓	✓		✓	0	0	0	6	0	4	0	2	0	0	12
TOTAL						0	0	6	27	0	29	9	14	0	2	87

Continuous Assessment		Percentage (%)	Conventional		Online	SLT
			F2F	NF2F		
1	Ujian (<i>Test</i>)	15	1	2		3
2	Ujian (<i>Test</i>)	15	1	2		3
3	Lain-lain (<i>Others</i>)	5	0.5	0	0	0.5
4	Penulisan Laporan (<i>Report Writing</i>)	25	0	15	1.5	16.5
TOTAL		60	2.5	19	1.5	23
Final Assessment		Percentage (%)	Conventional		Online	SLT
			F2F	NF2F		
1	Peperiksaan Akhir (<i>Final Examination</i>)	40	3	7		10
TOTAL		40	3	7	0	10
					GRAND TOTAL	120

10. Keperluan Khas / *Special Requirement*

Tiada

None

11. Rujukan / *Reference*

Young, H. D., Freedman, R. A., & Ford, A. L. (2019). *University physics with modern physics* (p. 822). New York: Pearson.

Hecht, E. (2002) Optics. 4th Edition, Addison Wesley, San Francisco.

Serway, R. A., & Jewett, J. W. (2013). *Principles of Physics: A Calculus-Based Text*. Cengage Learning.

12. Maklumat Tambahan Lain / *Others Additional Information*

Tiada / None

13. Pengesahan / Verification

	Disediakan/ Dikemaskini oleh: <i>Prepared/ Updated by:</i>	Disemak oleh: <i>Checked by:</i>
Nama: Name:	DR. ROSAZLEY BIN RAMLY	DR. MOHD FAUDZI BIN UMAR
Jawatan: Designation:	Penyelaras Kursus <i>Course Coordinator</i>	KETUA JABATAN
Tarikh: Date:	25 MARCH 2024	25 MARCH 2024

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