



1	Course Name:	Marin	ne Pollu	ition ar	nd Fish	eries (P	encem	aran M	larin dar	Perikan	an)					
	Course Code:	FIS51	23													
	Course Classification:	Electi	ve (cor	e)					Rem	arks:						
2	Synopsis:	agricu fisher of the	ulture, o	domes ources e, stud	tic was will be ents wi	te and s	sewage d in th	e, orgar e subje	ic pollutet. The s	tants, rac students	dioactive will also	contami be intro	nation, l duced to	and the management attempts to mitigate the neavy metals and trace elements, plastic, sedin various management approaches and its resp anagement in various tropical countries in pert	nents and biological pollution, and their in ective challenges in overcoming the issue:	mpact on the s. At the end
		1	Dr Em	nienoui	r Muza	lina bin	ti Must	afa								
3	Name(s) of Academic Staff:	2	Dr Bry	yan Ra	veen N	elson A	/L Nels	on Ber	nett							
		3														
4	Semester and Year offered:	_	ar Offe	red	2	Semi	ester	1	Ren	narks:						
5	Credit Value:				3(2+1											
6	Pre-requisite/ co-requisite (if any):															
7	At the end of the course, s	tudent	t should	d be a	ble to:											
		CL	LO1	Elabo	rate th	e risk o	f marin	e pollu	tion on	fisheries	industri	es. (PLO3	, C6)			
		CL	LO2	Organ	nize mo	nitorin	g progr	am for	marine	pollution	n for loca	lise fishe	ries indu	ustries. (PLO2, P5)		
		CL	LO3	Comp	are as	a group	the ho	olistic s	olutions	for mari	ine pollu	tion prob	lems in	fisheries. (PLO5, A4)		
	Course Learning Outcomes															
	(CLO)															
l																
8	Mapping of the Course Learning	Outco	mes to	the Pr	ogram	me Leai	rning O	utcom	es, Teac	hing Met	thods an	d Assess	ment Me	ethods		
						Progran	nme Le	arning	Outcom	es (PLO)	)					
	Course Learning Outcomes	PLO 1	PLO 2	PLO3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11		Teaching Methods	Assessment Methods	
	CLO1			٧										Case Study & Tutorial	Case Study Report	
	CLO2		٧											Practical	Practical, Presentation, Report	
	CLO3					٧								Group work discussion (Project) & Tutorial	Project Report	
				C2												
	Mapping with MQF Cluster of Learning	$\vdash$	СЗА	-										-		
	Outcomes	-	COA			C3B								-		
			L			СЗВ										
	Indicate the primary car	ısal link	betwee	en the C	LO and	PLO by	ticking	'V' in th	e approp	riate box						
	PLO1-Knowledge & Und	erstand	ding=C1,	, PLO2	-Practic	al Skills:	=C3A, I	PLO3-C	ognitive S	skills=C2,	PLO4-C	ommunic	ation Skil	ls=C3C, PLO5-Interpersonal Skills=C3B,		
	PLO6-Ethics & Profession	nalism=	-C5,	PLO7-F	Persona	l Skills=0	C4A, PI	.O8-Ent	repreneu	ırial Skills	=C4B, PI	.09-Leade	ership, Au	tonomy & Responsibility=C3F, PLO10-Digital Skill	s=C3D, PLO11-	
	Numeracy Skills=C3E															
9	Transferable Skills (if applica	ble)														
	(Skills learned in the course		lu which	h can	1	Cognit	tive skil	ls								
	be useful and utilized in oth			curi	2	_	ersona									
						,p										
					3											
						ended r	esponse	e (if any	)							
					4											
12	Distribution of Student Lear	ning Ti-	ma /cı T	Γ)												`
10	Note: This SLT calculation is				grown	orogran	nme or	ıly.								

	Course Content Outline and Subtopics	CLO*				Face-to-l	ace (F2F				NF2F	Total SLT
					sical				ronous)		Independent Learning (Asynchronous)	
1	Topic 1 : Introduction  - Overview of marine pollution  - GESAMP definition of marine pollution	CLO1	L	2 2	Р	0	L	Т	Р	0	2	
2	Topic 2 : Agrochemicals and agriculture pollution and their impact on fisheries resources	CLO1		4							4	
3	Topic 3 : Domestic waste and sewage and their impact on fisheries resources	CLO1		2							2	
4	Topic 4 : Organic pollutants and their impacts on fisheries resources	CLO1		4							4	
5	Topic 5 : Radioactive contamination and their impacts on fisheries resources	CLO1		2							2	
6	Topic 6: Heavy metals and trace elements, and their impacts on fisheries resources	CLO1		4							4	
7	Topic 7 : Plastic, sedimentation and biological pollution and their impacts of fisheries resources	CLO3		4							4	
8	Topic 8 : The concept of sustainability and current management practice for monitoring marine pollution on fisheries resources	CLO3		2							2	
9	Practical 1 : Agriculture pollution	CLO2			3						3	
10	Practical 2 :Domestic wastes	CLO2			3						3	
11	Practical 3 :Organic pollutants	CLO2			3						3	
12	Practical 4 :Radioactive	CLO2			3						3	
13	Practical 5 :Heavy metals	CLO2			3						3	
14	Practical 6 :Plastic pollution	CLO2			3						3	
15												
16												
17												
18												
19												
20												
						F	(525	-1			SUB-TOTAL SLT:	8
	Continous Assessment	%		Phy	sical	race-to-i	Online	e/ Techno	ology-me	ediated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Case study 1 & 2 Report (1000 words)	40									12	
2	Give talks on Marine Pollution issues to local fishermen	10			1						4	
3	Marine Pollution Talks program Final Report (1500 words)	20									7	
4	Lab Report	10										
5	Project 1 & 2 Report (1000 words)	20									12 SUB-TOTAL SLT:	3
						Face-to-l	Face (F2F	-)				
	Final Assessment	%		Phy	sical		1	e/ Techno	ology-me ronous)	ediated	NF2F Independent Learning for Assessment (Asynchronous)	
1												
3												
4												
5												
											SUB-TOTAL SLT: SLT for Assessment:	:
											GRAND TOTAL SLT:	1:
А			French	E3E P!	ical //=	tal 525 -	huein !	Total Ca	F O=!"		T for F2F Physical Component:	35.1
В	Urand car out	ne + Tot-I						% SLT f	or Online	e & Indep	ndependent Learning) x 100)] pendent Learning Component:	64.:
С	L(10tal F2F Onli	ne + rotarin	wepende	in Learn	119) /( T	nui r2r F	-rrysical -			% SL	Independent Learning) x 100] T for All Practical Component: tical + % F2F Online Practical	15.0
C1		Total F	2F Physic	al Practi	cal // Tot	al F2F PI	nysical +		% SL Online	T for F2F + Total In	Physical Practical Component dependent Learning) x 100)]	15.0
C2									% S	LT for F2	F Online Practical Component Independent Learning) x 100]	

	Please tick (V) if this course is <b>Industrial Training/ Clinic</b>	I Placement/ Practicum using S0% of Effective Learning Time (ELT)	
	Note:  * Indicate the CLO based on the CLO's numbering in Item 8  ** For ODL programme: Courses with mandatory practical rec the SLT.  *** L = Lecture, T = Tutorial, P= Practical, O= Others	uirements imposed by the programme standards or any related standards can be exempted from comp	olying to the minimum 80% ODL delivery rule in
11	Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room etc)		

12	References (include required and further readings, and should be the most current)	1. Beiras, R. (2018). Marine pollution: Sources, fate and effects of pollutants in coastal ecosystems. Waltham, MA: Elsevier. 2. Christodoulou-Varotsi, I. (2018). Marine pollution controi: Legal and managerial frameworks. New York, NY: Informa Law from Routledge. 3. Fouzia, H. B. (2019). Monitoring of marine pollution. London: InterCopen. 4. Majeti Narasimha Vara Prasad (2020). Agrochemicals detection, treatment and Remediation-Pesticides and Chemical fertilizers. www.elsevier.com. 5. Marcovecchio, J. E., & Arias, A. H. (2018). Marine pollution and climate change. Boca Raton: CRC Press Taylor & Francis Group. 6. Sagata JM, Zadeh SM & Turral H. (2017). Water pollution from Agriculture: a global review. Executive summary. The Food and Agriculture Organization of the United Nation Rome, 2017 & The International Water Management Institute 7. Weis, J.S. (2017) Marine Pollution: What everyone needs to know. Oxford University Press
13	Other additional information (if applicable)	
	· · · · · · · · · · · · · · · · · · ·	

	Date of Approval	Notes of Improvements (if any)	Checked By	Approved By
Programme	1/3/2021		2 0	<b>D</b>
Faculty	7/3/2021		- Cm-Ci	145
JPPPU	14/7/2021		DR. SHARIFAH NOOR EMILIA BINTI SYED JAMIL FAD'AAK	DR. WAN HOND RAUHAN SIN WAN HUSSIN Pengerusi Bidang Perikanan dan Akuakultur Sariana Sains Perikanan Tropika
Senate	25/7/2021		Pensyarah Universiti Fakulti Perikanan dan Sains Makanan	Sanana Sains Penkahari Hopika Sanana Sains (Akuakultur) Fakulti Perikanan dan Sains Makanan
Version	1		Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date : 1/3/2021	Date : 7/3/2021





			=											
1	Course Name:	Fisher	y Molecula	ar Ecolog	y (Ekologi N	Nolekul P	erikanan	)						
	Course Code:	FIS513	33											
	Course Classification:	Electiv	ve (core)				Ren	narks:						
2	Synopsis:	ecolog which relate	gical geneti are comm d to threat	ics and p nonly use tened aqu	opulation g d in fish pop uatic biodiv	enetics as pulation s ersity and	s well as studies su d associa	the applica uch as spec ted conser	ation of ies idei vation s	molecul ntificatio strategies	ar marke n, phylog will also	ement of fishery resources through molecular ers in the ecological and evolutionary aspects of geny, phylogeography, and conservation unit to be discussed. Students will also be trained to d scientific report writing.	of fish will be emphasized. Molecular tech determination will also be discussed. Curro	iniques ent issues
		1	Assoc. Pro	of. Dr. W	ong Li Lian									
3	Name(s) of Academic Staff:	2			- 0									
		3												
l . l	Semester and Year offered:		ar Offered	Т.	Semeste		0	marks:						
4	Semester and rear oriered.	164	31 Offered	1	Semeste	er 1	, ner	nurks.						
5	Credit Value:		3	3(3+0	0									
6	Pre-requisite/ co-requisite (if any):													
7	At the end of the course, s	tudent	should be	able to	:									
[		CL	.01 Det	termine	the applicat	ion and i	mportan	ce of mole	cular ec	ology in	conservi	ing fisheries research. (PLO3, C5)		
		CI			current issu									
					ase study to									_
		-	- 161		ase study to	determ	ine statu.	3 01 113116111	es more	culai ecc	nogy. (i	207, 83)		
	Course Learning Outcomes (CLO)	_	+											
	()		$\rightarrow$											
8	Mapping of the Course Learning	Outcor	mes to the	Program	me Learnin	g Outcon	nes, Tead	hing Meth	nods and	d Assessi	nent Me	ethods		
	Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods													
	Course Learning				Programm	e Learnin	g Outcon	nes (PLO)						
	Course Learning Outcomes	PLO 1	PLO 2	PLO 4	PLO 5	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11		Teaching Methods	Assessment Methods	
	CLO1		٧	/								Lecture, E-learning	Test, Final exam	
	CLO2			٧								Discussion, E-learning	Assignment, Presentation 1	
	CLO3					٧						Discussion, E-learning	Case study, Presentation 2	
	Mapping with MQF		C	:2										
	Cluster of Learning			C3C										
	Outcomes					C4A								
	Indicate the primary cau								DI O 4 C		ele e Chill	ls=C3C, PLO5-Interpersonal Skills=C3B,		
	PLO6-Ethics & Professio											tonomy & Responsibility=C3F, PLO10-Digital Skil	Is=C3D, PLO11-	
	Numeracy Skills=C3E												•	
	Tanadasahla Chilla (id it	hia)												
9	Transferable Skills (if applica				Communi	icatio - C'	ille							
	(Skills learned in the course be useful and utilized in othe				_		1115							
	Le aseja, and admice ill bull	501111	-5-7	2	Personal	SKIIIS								
				3	Cognitive	skills								
				Open	ended resp	onse (if an	у)							
				4										
10	Distribution of Student Lear	ning Ti-	ne (SLT)		•									` `
10	Note: This SLT calculation is			ie grown	programme	e only.								

	Course Content Outline and Subtopics	CLO*				Face-to-F	ace (F2F				NF2F	Total SLT
	course content outline and subtopies	CLO		Phy	sical		Online	/ Techno (Synchi	ology-me ronous)	diated	Independent Learning (Asynchronous)	
1	Introduction to Conservation Biology of Fisheries Resources.  • Why biodiversity and fisheries resources need to be preserved?  • Threatened and extinct fish species in the list of the International Union for Conservation of Nature (IUCN).	CLO1	1	Т	Р	0	L	Т	P	0	2	
2	Genetics in Ecology  Nucleic acid and the origins of life Genome structure: the overall picture Genotype and phenotype variations  DNA sequence and its application	CLO1	2								4	
3	Molecular Markers in Ecology  • Allozyme electrophoresis  • Restriction Fragment Length  • Polymorphism (RFLP)  • Amplified Fragment Length  • Polymorphism (AFLP)  • Minisatellites and microsatellites  • Single Nucleotide Polymorphism	CLO1	2								4	
4	Mechanism of Evolutionary Changes  • Mutation and evolutionary rate  • Gene flow and migration rate  • Natural selection  • Principles and types of evolution models	CLO1	2								4	
5	The Principles of Population Genetic  • The concepts of genetic diversity  • Measurement of genetic diversity  + Hardy-Weinberg Equilibrium (HWE)  • Fixation Index	CLO1	2								4	
6	Molecular Identification Methods  • Molecular identification methods for: -Species -Population -Sex - Determination of a population based on genetic information (Population assignment)	CLO1	2								4	
7	Conservation Unit  The basic concept of genetic conservation  Determination of species management units  Application of conservation units in the planning of fishery resource management	CLO1	2								4	
8	Conservation Genetics and Management of Endangered Species  • Genetics issues in threatened population • The diagnosis of genetic problems • Assessment of conservation strategies • Conservation breeding • Restoration Programs	CLO1	1				1				4	
9	Genomics in Fisheries Research  Next Generation Sequencing (NGS)  Large scale genome analysis  Algorithm for prediction of molecular function and structure  Comparative Genomics  Metagenomics  Transcriptomics	CLO1	1				1				4	
10	Explain the current issues related to thretened aquatic biodiversity [PLO4-A4]	CLO2				3				2	5	
11	Perform a case study to determine status of fisheries molecular ecology [PLO7-A5]	CLO3				3				2	5	
12												
13												
14												
15												
16												
18												
19												

20													
						•				•		SUB-TOTAL SLT	71
						Face-	to-Fac	e (F2F)				NF2F	
	Continous Assessment	%		Ph	hysica	l	(	Online,		ology-m ronous)	ediated	Independent Learning for Assessment (Asynchronous	)
1	Test	20			1							4	
2	Assignment	15										12	
3	Presentation 1	10			1							4	
4	Case study	15										12	
5	Presentation 2	10			1							4	
												SUB-TOTAL SLT	r: 39
				to-Fac	e (F2F)				NF2F				
	Final Assessment	%		Ph	hysical	ı		Online,		ology-m ronous)	ediated	Independent Learning for Assessment (Asynchronous	)
1	Final exam	40			2							8	
2													
3													
4													
5													
		SUB-TOTAL SLT:											10
												SLT for Assessment	49
												GRAND TOTAL SLT	120
А			[Total	I ESE Dh	vicical	//Total E2	E Dhur	rical L	Total E2	E Online		T for F2F Physical Component Independent Learning) x 100)]	
В									% SLT f	or Onlin	e & Inde	pendent Learning Component	78.33
		line + Total In	depende	nt Lear	rning)	/( Total F2	2F Phy	sical +	Total F2	PF Onlin		Independent Learning) x 100] LT for All Practical Component	
_	+								[%	F2F Phy % S	sical Pra LT for F2	ctical + % F2F Online Practical, F Physical Practical Componen	7 t
C1		[Total F2	2F Physic	al Pract	ctical /	( Total F2I	F Physi	ical + T	otal F2F			ndependent Learning) x 100)] PF Online Practical Component	
C2		[Tota	ıl F2F Onl	line Pra	actical	/ (Total F.	2F Phy	rsical +	Total F2			Independent Learning) x 100]	
	se tick (v) if this course is <b>Industrial Training/ Clinic</b>	al Placement,	:/ Practic	:um usin	ing 509	% of Effect	tive Le	arning	Time (E	LT)			
** Fo the Si	icate the CLO based on the CLO's numbering in Item 8 or ODL programme: Courses with mandatory practical rea	quirements imp	posed by 1	the prog	ogramm	ne standaro	ds or ar	ny relati	ed stand	ards can	be exem	oted from complying to the minir	mum 80% ODL delivery rule in

12	References (include required and further readings, and should be the most current)	1. Bourlat, S. J. (2016). Marine genomics: Methods and protocols. New York: Humana Press/Springer Science+Business Media LLC. 2. Kartavtsev, Y. P. (2016). Molecular evolution and population genetics for marine biologists. Boca Raton, FL: CRC Press. 3. Natividad, Cheryl. (2020). Genetics, molecular biology, cell biology, ecology and evolution. Oakville, ON: Delve Publishing. 4. Rieppel, O. (2016). Phylogenetic systematics: Haecket to Hennig. Boca Raton: CRC Press. 5. Rowe, G., & Sweet, M. (2017). An introduction to molecular ecology (Third Revised edition.). Oxford, United Kingdom: Oxford University Press.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)		Checked By	4	Approved By
Programme	1/3/2021			2.0		<del>D</del>
Faculty	7/3/2021			-Cm-Ci	DR WAN HO	HD RAUHAN BIN WAN HUSSIN
JPPPU	14/7/2021			DR. SHARIFAH NOOR EMILIA BINTI SYED JAMIL FAD'AAK	Pengerusi Bida Sarjana S	ang Perikanan dan Akuakultur Sains Perikanan Tropika
Senate	25/7/2021			Pensyarah Universiti Fakulti Perikanan dan Sains Makanan	Sarjar Fakulti Peri	na Sains (Akuakultur) kanan dan Sains Makanan
Version	1			Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	21030 K	iti Malaysia Terengganu uala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date :	1/3/2021	Date :	7/3/2021





					_												
1		e Name:	_		inology	and O	ceanogi	aphy (I	Limnol	logi dan	Oseanog	rafi Peri	kanan)				
	Cours	e Code:	FIS514	43													
[	Cours	e Classification:	Electiv	ve (cor	e)					Rem	arks:						
2	Synop	isis:	adapt be ex	ation o posed t	of fish b	y natu nethod	ral selec	tion, ar	nd sub ues to (	sequent evaluate	ecologio environ	al divers mental c	ification hanges a	n gener well as	ne ecosystems. Topics covered include the rol ating fish species diversity and allowing popul changes in fish and other aquatic animal's po act with other biota in both ecosystems.	ation and community persistence. Students	also will
			1	Assoc	. Prof. I	Dr. Sea	h Ying G	iiat									
3	Namo	(s) of Academic Staff:	2	_			Azman										
	Name	(3) Of Academic Staff.	_	7.0500		51.1101	712111011	Rusuii									
			3			1											
4	Seme	ster and Year offered:	Ye	ar Offe	red	1	Seme	ster	1	Ren	arks:						
5	Credit	: Value:				3(3+0 )											
6	Pre-re (if any	equisite/ co-requisite r):															
7	At the	e end of the course, s	tudent	should	d be al	ble to:											
			C1	.01	Inter-	rat +h -	ctruct	ro and	funct:	on of a-	uatic be	nitate for	custoin-	ala fich -	esources (PLO3 C5)		
					-										esources. (PLO3, C5)		$\dashv$
			CL	.02	Organ	ise the	inform	ation re	elate t	o limnol	ogical ar	d ocean	ographic	fisheries	through literatures. (PLO7, A4)		
			CL	.03	Verify	the bi	otic and	abiotic	facto	rs affect	fish com	munities	in fresh	vater an	d marine ecosystem through leadership perfo	ormance. (PLO9, A5)	
	Cours	e Learning Outcomes															
	(CLO)																
8	Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods																
	Programme Learning Outcomes (PLO)																
		Course Learning Outcomes	PLO 1	PLO 2	PLO 3	PLO4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11		Teaching Methods	Assessment Methods	
		CLO1			٧										Lecture	Final Exam	
		CLO2							٧						Tutorial	Reports	
		CLO3									٧				Discussion	Assignments, Presentation	
	-																
	ŀ				C2												
		Mapping with MQF Cluster of Learning	$\vdash$		-			$\dashv$	C4A								
		Outcomes	$\vdash$					$\dashv$	CHA		C3F						
	l										C3F						
		Indicate the primary cau	sal link	betwee	en the C	LO and	PLO by t	icking '	V' in th	e approp	riate box						
													ommunica	tion Skill	=C3C, PLO5-Interpersonal Skills=C3B,		
			nalism=	C5,	PLO7-P	ersona	Skills=C	4A, PLO	O8-Ent	repreneu	rial Skills	C4B, PL	O9-Leade	ship, Au	onomy & Responsibility=C3F, PLO10-Digital Skill	Is=C3D, PLO11-	
		Numeracy Skills=C3E															
9	Transf	ferable Skills (if applica	ble)														
						1	Cogniti	ve skill	s								
		learned in the course of leful and utilized in othe			ı can	2	Person										
						3	Leader	ship, Aı	utonoi	my and I	Responsi	bility					
							ended re	sponse	(if any	)							
						4											
. '																	
10	Dietrik	oution of Student Learn	ning Tir	ne /SIT	1												*

Courte Carrier Outries and Satistics   Court   Project   Section   Section												
Project		Course Content Outline and Subtonics	CLO*				Face-to-F				NF2F	Total SLT
Missource   Miss		Course Content Outline and Subtopies	CLO		Phy	sical		Online		diated	Independent Learning	rotal SE
1				L	Т	Р	0	L		 0	(Asynchronous)	
2 - Description of this population size	1	- Physical and chemical dynamics of limnology and oceanography	CLO1	4							4	
3   Compression   Control	2	- Diversity - Estimation of fish population size	CLO1	3							3	
- Exotic pages   - Trook algor   - Trook alg	3	- Competition	CLO1	3							3	
Security   Committee   Commi	4	- Food web - Exotic species	CLO1	3							3	
6 - Tools and strategies - Application (Joseph Land Confidence.  7 - Replication (Joseph Land Confidence.)  8 - Empirical Sharkers estationarility (LO3	5	ecosystem - Toxins and pollutants - Urbanization and effect towards aquatic	CLO1	3							3	
The price of the		- Tools and strategies	CLO1	3							3	
S   Climate change   CLO3		- Fisheries- environment nutrient relationship	CLO3				1					
Training resources   Trainin	8	- Climate change	CLO3				1					
11	9	<ul> <li>marine resources</li> <li>freshwater resources</li> <li>Biodiversity and habitat specificity</li> <li>topic will change according to current top</li> </ul>	CLO2		3						3	
12	10											
12	11											
13												
14	13											
15	_											
16												
17												
18	_											
19   20   SUB-TOTAL SLT:   SUB-TOTAL SLT:     Face-to-Face (F2F)     Independent Learning for Assessment (Synchronous)   1   Assignment (2 - 2000 words)   20   24   2   8   8   3   3   3   3   3   3   3   3	_											
SUB-TOTAL SLT:   SUB-TOTAL SLT:												
Sub-Total Str:   Sub-Total Str:	19											
Face-to-Face (FZF)   NF2F   Independent Learning for Assessment (2 - 2000 words)   20   2   8   8   8   8   8   8   8   8   8	20											
Continuous Assessment   %   Physical   Online/Technology-mediated (Synchronous)   Independent Learning for Assessment (Asynchronous)											SUB-TOTAL SLT:	46
2     Presentation (2 - CLO3)     10     2     8       3     Reports (3 - 2000 words)     30     30       4     Sub-TOTAL SLT:       Final Assessment     %     Face-to-Face (F2F)     NF2F Independent Learning for Assessment (Synchronous)       1     Final Exam     40     2     8       2     3     4       4     4     4		Continous Assessment	%		Phy		Face-to-F		/ Techno	diated	Independent Learning for	
3   30   30   30   30   30   30   30	_		20								24	
4 Sub-TOTAL SLT:  SUB-TOTAL SLT:  Final Assessment  %  Physical  Online/ Technology-mediated (Synchronous)  1 Final Exam  40 2 8 2 3 4	_					2						
Sub-total str:   Sub-	_	Reports (3 - 2000 words)	30								30	
SUB-TOTAL SLT:  Final Assessment  Final Assessment  Final Exam  40  2  8  1  40  1  Final Exam  Final												
Final Assessment % Physical Online/Technology-mediated (Synchronous)  1 Final Exam 40 2 8  2 8  4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			1								SUB-TOTAL SLT:	64
1 Final Exam 40 2 8 2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		Final Assessment	%		Phy		Face-to-F		e/ Techno	diated	Independent Learning for	
2 3 4	1	Final Exam	40			2			,			
4			-								-	
	3											
	_											
	5											

	SUB-TOTAL SLT:	10
	SLT for Assessment:	74
	GRAND TOTAL SLT:	120
А	% SLT for F2F Physical Component:  Total F2F Physical / Total F2F Physical + Total F2F Online + Total Independent Learning) x 1001	23.33
В	% S.LT for Online & Independent Learning Component: [(Total F2F Online + Total Independent Learning) // Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]	76.6
С	% SLT for All Practical Component: [% F2F Physical Practical + % F2F Online Practical]	
C1	% SLT for F2F Physical Practical Component [Total F2F Physical Practical // Total F2F Physical + Total Independent Learning) x 100)] % SLT for F2F Online Practical Component	
C2	[Total F2F Online Practical / (Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]	
Note: * Indi ** Fo the SI	cate the CLO based on the CLO's numbering in Item 8 r ODL programme: Courses with mandatory practical requirements imposed by the programme standards or any related standards can be exempted from complying to the minim.	um 80% ODL delivery rule in
	ecial requirement or resources to deliver the ., software, nursery, computer lab, simulation	

12	References (include required and further readings, and should be the most current)	1. Borges, B. A. A. (2018). Ecology and management of aquatic environments. Canada: Delve Publishing. 2. Bullock, S. (2018). A modern approach to oceanography. New York, NY: Syrawood Publishing House. 3. Cui, Q. (2017). Limnology and Oceanography. New York: Delve Publishing LLC. 4. Gao, K., & Hader, D. (2019). Aquatic ecosystems in a changing climate. Boca Raton, FL: CRC Press, Taylor and Francis Group. 5. Hamza, W., & Paul, T. T. (2019). Management and ecology of lake & reservoir fisheries. Delaware, United States: Excelic Press. 6. Luki Subehi, Zarul Hazrin Hashim, Wan Maznah Wan Omar, Muzzalifah Abd Hamid, & Mashhor Mansor. (2016). Lake Ecosystem & Services: Temengor Reservoir, Malaysia and selected Indonesian Lakes. Penang: School of Biological Sciences, Universiti Sains Malaysia. 7. Williams, J. (2019). Aquatic biology and ecology. Forest Hills, NY: Callisto Reference.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)		Checked By	,	Approved By
Programme	1/3/2021			2-0		h
Faculty	7/3/2021			DR. SHARIFAH NOOR EMILIA BINTI		7 <del>D</del>
JPPPU	14/7/2021			SYED JAMIL FAD'AAK Pensyarah Universiti	Pengerusi Bida	HD RAUHAN SIN WAN HUSSIN ang Perikanan dan Akuakultur
Senate	25/7/2021			Fakulti Perikanan dan Sains Makanan	Sariar	Sains Perikanan Tropika na Sains (Akuakultur) kanan dan Sains Makanan
Version	1			Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	Universi	ti Malaysia Terengganu uala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date :	1/3/2021	Date :	7/3/2021





		1.													
1	Course Name:	Sports	Sports and Game Fishing (Sukan dan Permainan Memancing)												
	Course Code:	FIS515	53												
	Course Classification:	Electiv	ve (core	<u></u>				Re	narks:						
$\vdash$	i														
2	Synopsis:	specie	es, the fi	ishing	metho		mous s	port fishi	ng area in	the wor	d, ethics	and prin	g industries and its regulations. Topics coverer ciples, rules and regulations applied and indus vorkshop.		
		1	Dr. Mo	hd. Fa	azrul Hi	sam Abd. A	Aziz								
3	Name(s) of Academic Staff:	2													
	Name(3) of Academic Stant.														
		3													
4	Semester and Year offered:	Ye	ar Offer	ed	1	Semeste	r 2	Re	marks:						
5	Credit Value:		3 3(3+0 )												
6	Pre-requisite/ co-requisite (if any):		<u> </u>												
7	At the end of the course, s	tudent	should	be at	ble to:										
<b>I</b> г	·														—, I
	CLO2 Evaluate different sport fishing regulations with regards to species and regions. (PLO3, CS)  CLO2 Display understanding on the ethics and principles of sports fishing. (PLO6, A5)														
	İ	CL	.02	Displa	ıy unde	rstanding	on the e	ethics and	principle	s of spor	ts fishing	. (PLO6,	A5)		
	İ	CI	.03	Organ	ise a co	omparative	study	on the co	mmercial	point of	view in s	oort fish	ing. (PLO9, A4)		_
	Ì	H		8			,			,					
	Course Learning Outcomes														
	(CLO)														
	Ì														
	İ														
	İ														
	Managina of the Course Languine	0.4		the De	=		- 0	T	-h: \$4-		d A		al ada		
8	Mapping of the Course Learning	Outco	illes to t	.iie ric	Jgraiiii	ne Leannin	g Outco	Jilles, Tea	Cilling Ivie	tilous all	u Maacaai	HEHE IVIE	eulous		
						Drogramm	a I oarni	ing Outco	mes (DI O	١					
	Course Learning	-	Programme Learning Outcomes (PLO)												
	Outcomes	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11		Teaching Methods	Assessment Methods	
		<u> </u>	а.		-				-	Δ.	Δ.				
	CLO1			٧		$\vdash$	_						Lecture, E-learning	Test, Final exam	
	CLO2					V	/						Discussion, E-learning	Assignment, Presentation 1	
	CLO3								٧				Discussion, E-learning	Case study, Presentation 1	
							+								
				C2	-		-								
	Mapping with MQF	-		C2		$\vdash$							-		
	Cluster of Learning Outcomes	<u> </u>		لــــــ	<u> </u>	С	5						4		
									C3F						
	İ														
	Indicate the primary cau	ısal link	betweer	n the Cl	LO and	PLO by tick	ing 'V' ir	the appr	priate box	t.					
	PLO1-Knowledge & Und	erstand											ls=C3C, PLO5-Interpersonal Skills=C3B,		
	PLO6-Ethics & Professio	nalism=	C5, F	PLO7-P	ersonal	Skills=C4A,	PLO8-	Entrepren	eurial Skills	=C4B, PI	.09-Leade	rship, Au	tonomy & Responsibility=C3F, PLO10-Digital Skil	Is=C3D, PLO11-	
	Numeracy Skills=C3E														
		1.1.2													
9	Transferable Skills (if applica	ible)													
	(Skills learned in the course			can	1	Cognitive	skills								
	be useful and utilized in oth	er settii	ngs)		2	Ethics and	l Profes	sionalism							
	i														
	i				3	Leadershi	p, Auto	nomy an	1 Respons	ibility					
	i				Open-	ended respo	onse (if a	any)							
	i				4										
	i														
	i														
10	Distribution of Student Lear														
1	Note: This SLT calculation is	design	ed for h	ome g	rown p	rogramme	only.								

						Le	earning a	nd Teach	ing Activ	rities**		
	Course Content Outline and Subtopics	CLO*				Face-to-F	Face (F2F				NF2F	Total SLT
				Phy	sical		Online	(Synch	ology-me ronous)	diated	Independent Learning (Asynchronous)	
			L	T	Р	0	L	T	Р	0		
1	Introduction - Definition - Industrial point of view	CLO3	2			2					4	
2	Species preferable - Famous Freshwater species - Famous Saltwater species	2				4				6		
3	Fishing Methodologies - Rod and Line fishing - Fly fishing	od and Line fishing CLO1 ly fishing					4				6	
4	Rules and Regulations - USA and Canada - Australia - Asia	2			4					6		
5	Industrial approaches by countries - Related industries	CLO1	2			2					4	
6	Ethics and principles of sports fishing - Catch and release methods - Open and close season	CLO2				6				3	9	
7	Organise a comparative study on the commercial point of view in sport fishing	CLO3				2				1	3	
8												
9												
11												
12												
13												
15												
16												
17												
19												
20												
						F 4- F	Fann /F3F				SUB-TOTAL SLT:	70
	Continous Assessment	%		Phy	sical	race-to-r	Online	e/ Techno	ology-me	ediated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Test	15			1						4	
2	Assignment	15									12	
3	Case study	15									12	
5	Presentation 1	15			1						4	
											SUB-TOTAL SLT:	34
	Final Assessment	%		Phy	rsical	Face-to-F	Face (F2F Online	e/ Techno (Synchi		ediated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Final exam	40			2						8	
2	-											
3							<u> </u>					
4												
5											SUB-TOTAL SLT:	1
											SLT for Assessment:	4
											GRAND TOTAL SLT:	12
A											T for F2F Physical Component:	25.0
В								% SLT fo	or Online	& Indep	ndependent Learning) x 100)] pendent Learning Component:	75.0
	[(Total F2F On	line + Total In	depende	nt Learn	ing) /( To	otal F2F F	hysical +			% SL	Independent Learning) x 100] T for All Practical Component:	73.0
С									% SL	T for F2F	tical + % F2F Online Practical] Physical Practical Component	
C4												
C1 C2		[Total F.	2F Physic	al Practi	cal /( Tot	al F2F Ph	nysical +	Total F2F	Online - % S	LT for F2	dependent Learning) x 100)] F Online Practical Component	

	Please tick (v) if this course is Industrial Training/ Clinical Placement/ Practicum using	50% of Effective Learning Time (ELT)
	Note:	
	<ul> <li>Indicate the CLO based on the CLO's numbering in Item 8</li> <li>For ODL programme: Courses with mandatory practical requirements imposed by the progr the SLT.</li> <li>L = Lecture, T = Tutorial, P = Practical, O = Others</li> </ul>	imme standards or any related standards can be exempted from complying to the minimum 80% ODL delivery rule in
11	Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room etc)	

12	References (include required and further readings, and should be the most current)	1. Danielson, T. (2018). Fish & environment. Valley Cottage, NY: Scitus Academics LLC. 2. Jung, K. (2018). Fish ecology. Valley Cottage, NY: Scitus Academics LLC. 3. Pease, S. (2016). Kayak fishing: How to get started and set up your boat. CreateSpace Independent Publishing Platform. 4. Steer, A. (2016). Sea fishing knots: From the reel to the hook. USA: Andy Steer. 5. USA. (2017). Sea fishing from shore and boat. USA: Read Country Books.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)	Checked By	Approved By
Programme	1/3/2021		20	<b>.</b>
Faculty JPPPU	7/3/2021 14/7/2021		DR. SHARIFAH NOOR EMILIA BINTI SYED JAMIL FAD'AAK Pensyarah Universiti	DR. WAN MOND RAUHAN BIN WAN HUSSIN Pengerusi Bidang Perikanan dan Akuakultur
Senate	25/7/2021		Fakulti Perikanan dan Sains Makanan	Sarjana Sains Perikanan Tropika Sarjana Sains (Akuakultur) Fakulti Perikanan dan Sains Makanan
Version	1		Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date : 1/3/2021	Date : 7/3/2021





1	Course Name: Coral Reef Fisheries (Perikanan Terumbu Karang)																		
	Cours	e Code:	FIS516	53															
li	Cours	e Classification:	Electiv	ve (core	)					Rem	arks:								
2	Synop	isis:	and th	ne mana	geme	nt of c	oral ree	ef fishe	ries. St	udents v	vill be ex	posed to	the con	ept of n	covers the importance of coral reef, the diversi narrine protected area and Coral Triangle initiati pacts on coral reef fisheries and the effective a	tive – coral reef, fisheries and food securit			
			1	Assoc.	Prof. I	Dr. Sea	h Ying	Giat											
3	Name	(s) of Academic Staff:	2																
	1401110	(s) or reducinie starr.																	
$\vdash$			3				_												
4	Seme	ster and Year offered:	Yea	ar Offer	ed	1	Sem	ester	2	Ren	narks:								
5	Credit	: Value:		3		3(3+0 )													
6	Pre-requisite/co-requisite (if any):																		
7	At the	e end of the course, s	tudent	should	be at	ble to:													
[ [			CL	.01	Evalua	ate the	variety	of cor	al reef	fishes ar	nd the pr	otection	of the re	sources	. (PLO3, C5)				
			- (1	$\rightarrow$			e threats and impacts on coral reef from natural and anthropogenic factors. (PLO5, A4)												
CLO3 Propose an appropriate coral reef management strategy. (PLO6, A5)																			
	Course Learning Outcomes																		
	(CLO)																		
[																			
8	Mapping	of the Course Learning	Outcor	mes to t	he Pro	ogram	ne Leai	rning C	utcom	es, Teac	hing Met	hods an	d Assess	nent Me	ethods				
				Programme Learning Outcomes (PLO)															
		Course Learning Outcomes  1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		PLO3	PLO4	PLO 5	PLO 6	PLO 7	PLO 8	6 O 7 d	PLO 10	PLO 11		Teaching Methods	Assessment Methods				
		CLO1			٧										Lecture, E-learning	Test, Final exam			
		CLO2					٧								Discussion, E-learning	Assignment, Presentation			
		CLO3						٧							Discussion, E-learning	Project, Presentation			
																110ject, 11cschalon			
		Mapping with MQF			C2														
		Cluster of Learning					C3B												
		Outcomes						C5											
		Indicate the primary cau																	
															Is=C3C, PLO5-Interpersonal Skills=C3B,				
		PLO6-Ethics & Profession Numeracy Skills=C3E	ialism=	C5, P	LU7-P	ersona	SKIIIS=0	_4A, PI	LU8-Ent	repreneu	ırıaı Skills	=c48, Pl	.U9-Leade	rsnip, Au	itonomy & Responsibility=C3F, PLO10-Digital Skill	Is=C3D, PLO11-			
9	Trans	ferable Skills (if applica	ble)												<u> </u>				
	(Skills	learned in the course o	of stud	v which	can	1	Interp	ersona	l skills										
		eful and utilized in othe				2	Ethics	and Pr	ofessio	nalism									
						3	Cognit	tive ski	lls										
						Open-	ended r	espons	e (if any	)									
						4													
							_										,		
10		oution of Student Learn This SLT calculation is				ירטעים	rngran	nme cr	nlv										
	14016;	s ser calculation is	acaigi It	-a 101 fl	ome g	, own	og i all	e UI	у.								ŀ		

Fis   Fis	Course Content Outline and Subtopics  Ishery resources History, development and production status of shery resources globally and locally. The importance and contribution of coral reef sheries sector.  We of fishery resources High commercial fishery resources. Low commercial fishery resources. Unconcern fishery resources. Oral reef Biodiversity. Coverage. Importance. Ishing practices Gill net, fish trap, bottom trawling, cyanide shing, dynamite fishing, muroami fishing, and tc.  hereats and impacts to coral reef Destructive fishing, ghost fishing, vessel nichor, human-caused, natural threats and etc.  oral reef management Adaptive management strategies. Marine protected areas (MPAs). Coral Triangle Initiative (CIT). Regulations and laws.	CLO1  CLO1  CLO1  CLO2	1 2 2	Phy	sical P	Face-to-	Face (F2F Online L 1	e/ Techno	plogy-me	O	NF2F Independent Learning (Asynchronous)	Total SLT
Fis   Fis	ishery resources History, development and production status of shery resources globally and locally. The importance and contribution of coral reef sheries sector.  ype of fishery resources High commercial fishery resources. Low commercial fishery resources. Unconcern fishery resources. Ourconcern fishery resources. Indiversity. Coverage. Importance. Importance. Ishing practices Gill net, fish trap, bottom trawling, cyanide shing, dynamite fishing, muroami fishing, and tc.  hreats and impacts to coral reef Destructive fishing, ghost fishing, vessel nechor, human-caused, natural threats and etc.  Adaptive management Adaptive management Adaptive management strategies. Marine protected areas (MPAs). Coral Triangle Initiative (CTI). Regulations and laws.	CLO1 CLO1 CLO1	1 2			0	1	(Synch	ronous)		Independent Learning (Asynchronous)	ica 31
1 fish 1	History, development and production status of shery resources globally and locally. The importance and contribution of coral reef sheries sector.  ype of fishery resources. High commercial fishery resources. Low commercial fishery resources. Low commercial fishery resources. Unconcern fishery resources. U	CLO1 CLO1 CLO1	1 2	T	P	0	1			0		
1 fish 1	History, development and production status of shery resources globally and locally. The importance and contribution of coral reef sheries sector.  ype of fishery resources. High commercial fishery resources. Low commercial fishery resources. Low commercial fishery resources. Unconcern fishery resources. U	CLO1 CLO1 CLO1	1 2				1		·		4	
2 • L • C • C • C • C • C • C • C • C • C	High commercial fishery resources. Low commercial fishery resources. Unconcern fishery resources. oral reef Blodiversity. Coverage. Importance. shing practices Gill net, fish trap, bottom trawling, cyanide shing, dynamite fishing, muroami fishing, and tc. hreats and impacts to coral reef Destructive fishing, ghost fishing, vessel nchor, human-caused, natural threats and etc. oral reef management Adaptive management strategies. Marine protected areas (MPAs). Coral Triangle initiative (CTI). Regulations and laws.	CLO1	2				1					
3 • CE   Fiss	Biodiversity. Coverage. Importance. sishing practices Gill net, fish trap, bottom trawling, cyanide shing, dynamite fishing, muroami fishing, and tt. hreats and impacts to coral reef Destructive fishing, ghost fishing, vessel nchor, human-caused, natural threats and etc. oral reef management Adaptive management strategies. Marine protected areas (MPAs). Coral Triangle Initiative (CTI). Regulations and laws.	CLO2									4	
Fis of the second of the secon	shing practices  Gill net, fish trap, bottom trawling, cyanide shing, dynamite fishing, muroami fishing, and tc.  hreats and impacts to coral reef Destructive fishing, ghost fishing, vessel nchor, human-caused, natural threats and etc.  oral reef management Adaptive management strategies.  Marine protected areas (MPAs). Coral Triangle Initiative (CTI).  Regulations and laws.		2				1				6	
5 • E and and a second and a se	Destructive fishing, ghost fishing, vessel nchor, human-caused, natural threats and etc. oral reef management Adaptive management strategies. Marine protected areas (MPAs). Coral Triangle Initiative (CTI). Regulations and laws.	CLO2				1	1				7	
6 • A • N • C • C • C • C • C • A • A • A • A • A	Adaptive management strategies. Marine protected areas (MPAs). Coral Triangle Initiative (CTI). Regulations and laws.		2			1	1				7	
7 • C • A 8 9 10 11 12	Information and education.	CLO3	4			2	1				12	
9 10 11 12	oral restoration Coral farming. Artificial reef.	CLO3	2			2	1				8	
10 11 12												
11 12												
12												
-												
13												
14												
15												
16												
17												
18												
19												
20												
											SUB-TOTAL SLT:	75
	Continous Assessment	%				Face-to-	Face (F2F			dr. c	NF2F Independent Learning for	
	Common Assessment	70		Phy	sical		Online		ology-me ronous)	diated	Assessment (Asynchronous)	
1 Te:	est	20			1						4	
2 As	ssignment	10									10	
	resentation 1	10	_		1						4	
	roject	10			1						10	
5 Pre	resentation 2	10			1						4 SUB-TOTAL SLT:	35
						Face-to-	Face (F2F	)				
	Final Assessment	%		Phy	sical		1	e/ Techno	ology-me ronous)	diated	NF2F Independent Learning for Assessment (Asynchronous)	
1 Fin	inal exam	40			2						8	
2												
3												
5											i	
٠			1									
—											SUB-TOTAL SLT:	10

		GRAND TOTAL	SLT: 12										
	A	% SLT for F2F Physical Compo	ent: 20.8										
	^	[Total F2F Physical /(Total F2F Physical + Total F2F Online + Total Independent Learning) x 1	10)]										
	В	% SLT for Online & Independent Learning Compo	ent: 79.1										
	P	[(Total F2F Online + Total Independent Learning) /( Total F2F Physical + Total F2F Online + Total Independent Learning) x 1	[(Total F2F Online + Total Independent Learning) /( Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]										
		% SLT for All Practical Compoi	ent:										
	C	[% F2F Physical Practical + % F2F Online Pract											
	C1	% SLT for F2F Physical Practical Compo											
		[Total F2F Physical Practical /( Total F2F Physical + Total F2F Online + Total Independent Learning) × 1 % SLT for F2F Online Practical Compo											
1	C2												
	Please tic	(Total F2F Online Practical / (Total F2F Physical + Total F2F Online + Total Independent Learning) x: ick (V) if this course is Industrial Training/ Clinical Placement/ Practicum using 50% of Effective Learning Time (ELT)	00]										
	Note:	ick (v) if this course is Industrial Training/ Clinical Placement/ Practicum using 50% of Effective Learning Time (ELT)	00)										
	Note: * Indicate t ** For ODL the SLT.												

12	References (include required and further readings, and should be the most current)	1. Comacho, E. T., & Beltran, C. D. (2018). Corals in a changing world. Crotia: InTechOpen. 2. Gerry Goeden, Norhayati Ahmad, & Jamili Nais. (2018). Life in the triangle: Tun Sakaran Marine Park and Sipadan Island Park. Bangi, Selangor: Penerbit Universiti Kebangsaan Malaysia. 3. Latypov, k. (2016). Coral reef ecosystem in space and time: Based on the reefs of Vietnam. New York: Nova Science Pub Inc. 4. Ortiz, S. L. (2016). Coral reefs: Ecosystems, environmental impact and current threats. New York: Nova Science Pub Inc. 5. Poh, S. C., Muhammad Hafíz Borkhanuddin, Tan, C. H., & Stil Nurtahirah Jaafar. (2020). Citizen scientist coral reef rescue program: Coral reef restoration handbook. Kuala Nerus, Terengganu: Penerbit UMT.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)	Checked By	Approved By
Programme	1/3/2021			<b>.</b>
Faculty	7/3/2021		-En-Ci	(18)
JPPPU	14/7/2021		DR. SHARIFAH NOOR EMILIA BINTI SYED JAMIL FAD'AAK	DR. WAN MOND RAUHAN BIN WAN HUSSIN Pengerusi Bidang Perikanan dan Akuakultur
Senate	25/7/2021		Pensyarah Universiti Fakulti Perikanan dan Sains Makanan	Sarjana Sains Perikanan Tropika Sarjana Sains (Akuakultur) Fakulti Perikanan dan Sains Makanan
Version	1		Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date : 1/3/2021	Date : 7/3/2021





	· ·	- Name	mate.	n.	:		Mate C:		Danit :							
1		se Name:	_		intorm	atics (E	Bioinfor	matik i	erikar	nan)						
	Cours	se Code:	FIS517	73												
	Cours	se Classification:	Electiv	ve (cor	e)					Rem	arks:					
2	Synop	osis:	predic health hiddei	ction ar n, nutri n Mark	nd func tion an cov mo	tional d repro del will	annotat oductior I also be	ion of n of aq discus	genes uatic o ssed. A	and prot organism at the en	teins will s will be d of the	be intro emphas course, s	duced. C ized. Bioi tudents v	oncepts nformati vill be al	ement of fisheries resources. Models and algi and application of bioinformatics softwares u cs tools in predictive ecology and their applica- le to evaluate the capabilities and effectivene ictive ecology for better management of fishe	sed to analyse biological molecules data rela ations to fisheries such as the Bayesian netw ess of various bioinformatics tools in molecul
			1	Assoc	Prof.	Ts. Dr.	Muhd E	anish	Daniel	Abdulla	h					
3	Name	e(s) of Academic Staff:	2													
4	Seme	ester and Year offered:		ar Offe	red	1	Seme	ster	2	Ren	narks:					
5	Credi	t Value:				3(3+ 0)										
6	Pre-re	equisite/ co-requisite y):														
7	At the	e end of the course, s	tudent	should	d be al	ole to:										
				.01	-										molecular analyses. (PLO3, C5)	
			CL	.02	Identi	fy mod	dels in p	redicti	ive eco	logy for	better m	nanagem	ent of fis	neries re	sources. (PLO7, A4)	
			CL	.03	Displa	y a cor	nceptua	l frame	ework	and stra	tegy in fi	sheries r	esearch ι	sing bio	informatics tools and resources. (PLO10, A4)	
	Cours	se Learning Outcomes														
	(CLO)															
		Course Learning Outcomes	PLO 1	PLO 2	PLO 3	PLO 4	Program 5 Old	nme Le	earning LO 7	Outcon 8 9	nes (PLO)	PLO 10	PLO 11		Teaching Methods	Assessment Methods
		CLO1			٧				_			_	<u> </u>		Lecture, E-learning	Test, Final exam
		CLO2							٧						Lecture, Discussion	Assignment, Presentation
		CLO3										٧			Lecture, E-learning, Discussion	Report, Presentation
		Mapping with MQF	_		C2											
		Cluster of Learning Outcomes	<u> </u>						C4A							
		Gutcomes										C3D				
		Indicate the primary cau														
															s=C3C, PLO5-Interpersonal Skills=C3B, tonomy & Responsibility=C3F, PLO10-Digital Skil	lls=C3D, PLO11-
		Numeracy Skills=C3E	-analii=		. 207-P	Craorid	. JAMS-U	⊸n, rL	Joreni	cprenet	a ioi SKIIIS	-C40, PI	.os-Leade	. Jinp, Au	conomy a neaponatomicy-Car, recuto-digital akil	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
9	Trans	ferable Skills (if applica	ble)													
	(Skills	learned in the course o	of study	y which	h can	1	Person	al Skill	s							
		eful and utilized in othe				2	Digital	Skills								
							3									
						3	Cogniti	ive skil	ls							
						Open-	ended re	esponse	e (if any	r)						
						4										
10		bution of Student Learr														
	Note:	This SLT calculation is	designe	ed for I	home g	rown p	program	me on	ıly.							
- 1																

	Course Content Outline and Subtopics	CLO*			NF2F	Total SLT						
	Course Content Outline and Subtopics	CLO		Phy	sical		Online		ology-me ronous)	diated	Independent Learning	10001321
			L	Т	Р	0	L	Т	P	0	(Asynchronous)	
1	Introduction  - Overview of bioinformatics and its applications - Bioinformatics in life and environmental sciences	CLO1	2			2					4	
2	Role of Computer in Bioinformatics - Computer languages for bioinformatics - Tools and resources - Biological databases	CLO3	4			3					7	
3	Genomic Approach to Fisheries  - Marking genomes  - Mapping genomes  - Analysis of genome expression and function	CLO1	4			3					7	
4	Genetics in the discovery and monitoring of marine biodiversity  - Marine biodiveristy and genetics – a global perspective  - Marine biodiversity – structural and functional components  - Genetic diversity and functional analyses  - DNA Barcoding and fisheries	CLO1	4			4					7	
5	Bioinformatics approach to understand population structure and adaptations - Nutritional adaptations - Reproductione adaptations - Other environmental adaptations	CLO2	1			1					2	
6	Bioinformatics in predictive fisheries ecology - Bayesian network analysis - Spatial analysis - Phylogeny and phylogeography	CLO2	2			1					3	
7	Practical Guide to Genomic Analysis  - Molecular Phylogeny using MEGA  - Genomic Sequencing Strategies  - De novo assembly and annotation of NGS data	CLO3	2			5					7	
8												
9												
10												
11												
12												
13												
14												
15												
_												
16												
17												
18												
19												
20												
											SUB-TOTAL SLT:	75
	Continous Assessment	%				Face-to-F			-les	alia e e e	NF2F Independent Learning for	
	Containous roscosificial	,0		Phy	sical		Online		ology-me ronous)	aiated	Assessment (Asynchronous)	
1	Test	15			1						4	
2	Assignment	10									10	
3	Presentation 1	10			1						3	
_	Report Presentation 2	15			1						12 3	
5	. rescitation 2	10			-		<u> </u>				SUB-TOTAL SLT:	35
						Face-to-F	ace (F2F	)				
	Final Assessment	%		Phy	sical		1	/ Techno	ology-me ronous)	diated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Final exam	40			2						8	
2												

							3
							4
							5
10	SUB-TOTAL SLT:		1			<b>'</b>	
45	SLT for Assessment:						
120	GRAND TOTAL SLT:						
35.83	for F2F Physical Component:	% hysical + Total F2F Online + Tot	Total F2F Physical /(Total F.				А
64.17	endent Learning Component:			PF Online + Total	[(Total F2F O		В
	for All Practical Component: cal + % F2F Online Practical]						С
	hysical Practical Component	% SLT for hysical + Total F2F Online + Tota	2F Physical Practical // Total F2	[Total			C1
	Online Practical Component		, , , , , , , , , , , , , , , , , , , ,				C2
m 80% ODL delivery rule in	ed from complying to the minimum 80%		•	n 8	on the CLO's numbering in Item 8 courses with mandatory practical re ial, P= Practical, O= Others	: icate the CLO based or ODL programme: LT.	Note * Ind ** Fe
					or resources to deliver the y, computer lab, simulation		

12	References (include required and further readings, and should be the most current)	1. Abu-Jamous, B., Fa, R. & Nandi, A.K. 2015. Integrative Cluster Analysis in Bioinformatics. USA: Wiley-Blackwell. 2. Pevsner, J. 2015. Bioinformatics and Functional Genomics, 3rd Edition. USA: Wiley-Blackwell. 3. Bourlat, Sarah J. (Ed.). 2016. Marine Genomics: Methods and Protocols. Switzerland: Springer Nature. 4. Selzer, Paul M., Marhöfer, Richard J., Koch, Oliver, 2018. Applied Bioinformatics: An Introduction. Switzerland: Springer Nature. 5. Wadhwa, G., Shanmughavel, P., Singh, A.K., Bellare, J.R. (Eds.). 2018. Current Trends in Bioinformatics: An Insight. Switzerland: Springer Nature.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)		Checked By	Approved By
Programme	1/3/2021			2-0	O D
Faculty	7/3/2021			DR. SHARIFAH NOOR EMILIA BINTI	DR. WAN MOND RAUHAN SIN WAN HUSSIN
JPPPU	14/7/2021			SYED JAMIL FAD'AAK : Pensyarah Universiti	Pengerusi Bidang Perikanan dan Akuakultur Sarjana Sains Perikanan Tropika
Senate	25/7/2021			Fakulti Perikanan dan Sains Makanan Universiti Malaysia Terengganu	Sarjana Sains (Akuakultur) Fakulti Perikanan dan Sains Makanan
Version	1			21030 Kuala Nerus, Terengganu	Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date :	1/3/2021	Date: 7/3/2021





		1				-		_							
1	Course Name:	-		lenishm	nent Ar	eas (Kav	wasan	Pemuli	ihan Hab	oitat)					
	Course Code:	FIS51	183												
	Course Classification:	Elect	tive (cor	e)					Rem	arks:					
2	Synopsis:	comr	monly p sures to	ractice replen	d destr	uctive fi d protec	ishing ( ting th	gears i e degr	n the co aded ha	astal wat	ers. The	destruct clude va	ions follo	wing physical development will also be disc thods of fishing habitat restoration including	l waters. The course begins with lectures on cussed. Then the discussion continues with m g installation of artificial reefs, ships wrecks, a
		1	Dr. W	an Mol	hd. Rau	uhan Wa	n Hus	sin							
3	Name(s) of Academic Sta	f: 2	+												
4	Semester and Year offere	_	ear Offe	ered	1	Seme	ster	2	Ren	narks:					
5	Credit Value:		3		3(3+0										
6	Pre-requisite/ co-requisit (if any):														
7	At the end of the course	, studen	nt should	d be al	ble to:										
		С	CLO1	Descri	ibe var	ious fac	tors of	habita	nt destru	iction and	d repleni	shment a	pproach	es. (PLO3, C5)	
		С	CLO2	Propo	se miti	igation r	neasur	res of o	destructe	ed habita	ts accor	ding to p	ofession	al code of practice. (PLO6, A5)	
		C	CLO3	Formu	ulate a	collectiv	e stra	tegy or	n monito	oring repl	enished	habitats	through	peers discussion. (PLO9, A4)	
	Course Learning Outcom	s													
	(CLO)														
8	Mapping of the Course Learn	ng Outco	omes to	tne Pro	ogramr	me Lear	ning U	utcom	es, reac	ning iviet	noas an	a Assessi	nent ivie	tnods	
					-	Program	nme Le	arning	Outcom	nes (PLO)					
	Course Learning Outcomes	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	BLO 8	6 OTA	PLO 10	PLO 11		Teaching Methods	Assessment Methods
	CLO1			٧										Lecture, E-learning	Test, Final exam
	CLO2						٧							Lecture, Discussion,	Assignment 1,2, Presentation 1
	CLO3									٧				Lecture, Discussion	Assignment 1,2, Presentation 1
			$\perp$												
			$\perp$												
	Mapping with MO			C2											
	Cluster of Learnin						C5								
	Outcomes									C3F					
	Indicate the primary	ausal link	k betwee	en the C	LO and	PLO by t	icking	'V' in th	ie approp	riate box					
														s=C3C, PLO5-Interpersonal Skills=C3B,	
	PLO6-Ethics & Profes Numeracy Skills=C3E	ionalism	=C5,	PLO7-P	Personal	I Skills=C	4A, PL	.O8-Ent	repreneu	ırial Skills	=C4B, PI	.09-Leade	rship, Au	tonomy & Responsibility=C3F, PLO10-Digital S	kills=C3D, PLO11-
9	Transferable Skills (if app	cable)	-												
	(Skills learned in the cour		dv whic	h can	1	Ethics a	and Pro	ofessio	nalism						
	be useful and utilized in a			cuii	2	-				Responsi	bility				
					3	Cogniti	ve skil	ls							
						ended re	sponse	e (if any	)						
					4										
						1									
10	Distribution of Student Le				rown -	orogram	me ^-	ılız							

	Course Content Outline and Subtopics	CLO*				Face-to-F	ace (F2F				NF2F	Total SLT
				Phy	sical		Online		ology-me ronous)	diated	Independent Learning	
			L	Т	Р	0	L	Т	Р	0	(Asynchronous)	
1	Introduction • Definition • Current status of threaten marine habitat in the World and Malaysia Waters	CLO1	3			2	2				7	
2	Contributing factors to habitat Degradation  • Human factors (fishing and marine exploration, river mouth alteration and reclamation activities)  • Natural hazards (Tsunami, cyclones etc.)	CLO1	3			2	2				7	
3	Detrimental development  • Fishing methods (detrimental gears)  • Coastal developmant (Reclamation etc.)	CLO1	3			2	2				7	
4	Types of habitat degradation  • Fishing ground degradation  • Coastal habitat degradation (mangrove, seagrass, mudflats)	CLO1	3			2	2				7	
5	Mitigation, and habitat replenishment approaches  • Physical approaches  • Installation of artificial reefs and FAD's  - Ship wreck  - Beach replenishment, mangrove protection, revertment etc  - Biological approaches  - Coastal restoration e.g. mangrove replanting etc  • Policy and legal approaches	CLO2	1			3	1				S	
6	Continues assessment and monitoring of replenished areas	CLO3	1			3	1				5	
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
											SUB-TOTAL SLT:	76
						Face-to-F	ace (F2F	)			NF2F	
	Continous Assessment	%		Phy	sical		Online		ology-me ronous)	diated	Independent Learning for Assessment (Asynchronous)	
1	Test	15			1			(Syrich	ionousj		4	
2	Assignment 1	15									12	
3	Assignment 2	15									12	
4	Presentation 2	15			1						4	
5												
								,			SUB-TOTAL SLT:	34
	Final Assessment	%		Phy		Face-to-F	Online	/ Techno	ology-me ronous)	diated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Final exam	40			2						8	
2												
3												

	1			I		1
4						
5						
					SUB-TOTAL SLT:	10
					SLT for Assessment:	44
					GRAND TOTAL SLT:	120
Α			[Total F2F Physical /(Total F2F P	% SL1 hysical + Total F2F Online + Total In	F for F2F Physical Component:	26.67
В	[/Total F2F On	nline + Total In	dependent Learning) /( Total F2F F	% SLT for Online & Indep Physical + Total F2F Online + Total II	nendent Learning Component: ndependent Learning) x 100]	73.33
С					T for All Practical Component: tical + % F2F Online Practical]	
C1		[Total F2	Pr Physical Practical /( Total F2F Ph	% SLT for F2F nysical + Total F2F Online + Total In	Physical Practical Component	
C2		[Tota	I F2F Online Practical / (Total F2F F	Physical + Total F2F Online + Total I		
Note: * Indic ** For the SLT	icate the CLO based on the CLO's numbering in Item 8 or ODL programme: Courses with mandatory practical re		·		ted from complying to the minim	um 80% ODL delivery rule in
	ecial requirement or resources to deliver the, software, nursery, computer lab, simulation					

12	References (include required and further readings, and should be the most current)	1. Acevedo, M. F. (2016). Real-time environmental monitoring: Sensors and systems. Boca Raton: CRC Press, Taylor & Francis Group. 2. Ballard, H. L., & Cigliano, J. A. (2018). Citizen Science for Coastal and Marine Conservation. London: Routledge Taylor & Francis Ltd. 3. Higgins, M. (2019). Environmental quality, monitoring and management. Forest Hill, NY: Callisto Reference. 4. Jones, P.J.S. 2016. Governing Marine Protected Areas: Resilience through Diversity. Routledge. 256pp. 5. Pauly, D. Zeller, D. 2016. Global Atlas of Marine Fisheries: A Critical Appraisal of Catches and Ecosystem Impacts. Island Press. 520 pp. 6. Poh, S. C., Muhammad Haffz Borkhanddin, Tan, C. H., & Still Nurtahirah Jaafar. (2020). Citizen scientist coral reef rescue program: Coral reef restoration handbook. Kuala Nerus, Terengganu: Penerbit UMT.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)		Checked By	Approved By
Programme	1/3/2021			00	h
Faculty	7/3/2021			DR. SHARIFAH NOOR EMILIA BINTI	
JPPPU	14/7/2021			SYED JAMIL FAD'AAK Pensvarah Universiti	DR. WAN MOND RAUHAN BIN WAN HUSSIN Pengerusi Bidang Perikanan dan Akuakultur
Senate	25/7/2021			Fakulti Perikanan dan Sains Makanan	Sarjana Sains Perikanan Tropika Sarjana Sains (Akuakultur) Fakulti Perikanan dan Sains Makanan
Version	1			Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date :	1/3/2021	Date : 7/3/2021





	Cours	e Code:	FIS519	<del>3</del> 3												
	Cours	e Classification:	Electi	ve (core	e)					Rem	arks:					
2	Synop	osis:													ndling and transportation, processing and distr technological development for product shelf-l	
			1	Dr. Nu	ırul Ulf	ah Kari	im									
3	Name	e(s) of Academic Staff:	2													
			3													
4	Seme	ster and Year offered:	Ye	ar Offe	red	1	Sem	ester	2	Rer	narks:					
5	Credit	t Value:				3(2+ 1)										
6	Pre-re (if any	equisite/ co-requisite y):														
7	At the	e end of the course, s	tudent	should	d be al	ole to:										
			CL	.01	Explai	n the c	ommoi	n pract	ices in	olved ir	fish and	fish pro	duct pro	essing a	and packaging. (PLO3, C5)	
			CI												nt. (PLO2, P4)	
			$\vdash$		-										product. (PLO7, A4)	
	Cours	e Learning Outcomes				_										
	(CLO)															
_	T	af the Causes I agested	Outes		Aba Da	_				T	hina Mar		4 4			
8	iviapping	of the Course Learning	Outco	mes to	the Pro	gramı	iie Leai	rning C	Julcom	es, reac	ning ivie	trious ari	u Assessi	nent ivie	etrious	
						Г	Progran	nme Le	earning	Outcon	nes (PLO)	)				
		Course Learning Outcomes	110							8 0	60	01	#		Teaching Methods	Assessment Methods
			PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO	PLO			
		CLO1			٧										Lecture, E-learning	Test, Final exam
		CLO2		٧	_										Demonstration, Practical	Lab assessment, lab report
		CLO3		<u> </u>	_				٧						Lecture, Discussion	Assignment
				_												
					C2											
		Mapping with MQF Cluster of Learning		СЗА												
		Outcomes							C4A						_	
	'		-													
	1	Indicate the primary cau														
															ls=C3C, PLO5-Interpersonal Skills=C3B, tonomy & Responsibility=C3F, PLO10-Digital Skil	Is=C3D, PLO11-
	1		i idii3iii-	CJ,	1107-1	Ersonai	i Janiis=C	onn, m	LOG-LIII	reprene	ariai Skiiis	-C40, FE	.OJ-Leaue	ranip, Au	tolioniy & responsibility=C31, FE010-Digital 3kii	is=CSD, PLOTI-
		Numeracy Skills=C3E														
9		Numeracy Skills=C3E ferable Skills (if applica	ible)					tive ski	lls							
9	Trans:	ferable Skills (if applica	of stud		ı can	1	-									
9	Trans:	ferable Skills (if applica	of stud		ı can	2	-	nal Skil	ls							
9	Trans:	ferable Skills (if applica	of stud		ı can	_	-	nal Skil	ls							
9	Trans:	ferable Skills (if applica	of stud		n can	2 3 Open-e	-			)						
9	Trans:	ferable Skills (if applica	of stud		n can	3	Persoi			)						
9	Trans:	ferable Skills (if applica	of stud		n can	2 3 Open-e	Persoi			)						

						Le	earning a	nd Teach	ing Activ	ities**		
	Course Content Outline and Subtopics	CLO*				Face-to-l	ace (F2F	)			NF2F	Total SLT
	Course Content Outline and Subtopics	CLO		Phy	sical		Online		ology-me ronous)	diated	Independent Learning	Total SET
			L	Т	Р	0	L	Т	P	0	(Asynchronous)	
1	Introduction - Seafood industry - Harvesting techniques - Handling and transportation	CLO1	2								2	
2	Processing - Fish texture - Flesh quality - Techniques of fish and fish product processing	CLO1	2								2	
3	Physico-chemical and biochemical changes - Fish enzyme - Microbial degradation	CLO1	2								2	
4	Packaging  - Comman packaging techniques  - Thermal processing technologies  - Non-thermal processing technologies  - Packaging and storage	CLO1	2			2					4	
5	Quality assessment - Common procedure	CLO3	3			4					6	
6	Practical - fish and fish product processing	CLO2			6						6	
7	Practical - Packaging	CLO2			6						6	
8	Practical - Quality assessment	CLO2			3						3	
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
											SUB-TOTAL SLT:	63
	Continous Assessment	%		Phy	sical	Face-to-I	Online	e/ Techno	ology-me ronous)	diated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Test	15			1						4	
2	Lab assessment	20									20	
4	Lab report Assignment	10 15									10	
5	, asignment	13									14	
-											SUB-TOTAL SLT:	47
						Face-to-l	ace (F2F	)			NF2F	
	Final Assessment	%			sical		Online		ology-me ronous)	diated	Independent Learning for Assessment (Asynchronous)	
1	Final exam	40	_		2						8	
3												
4												
5												
											SUB-TOTAL SLT:	10
											SLT for Assessment:	57
											GRAND TOTAL SLT:	120
Α			[Total	F2F Phys	sical /(To	tal F2F P	hysical +			+ Total Ir	F for F2F Physical Component: adependent Learning) x 100)]	29.17
								% SLT f	or Online	& Indep	endent Learning Component:	70.83

	С		% SLT for All Practical Component: [% F2F Physical Practical + % F2F Online Practical]	12.50
	C1		% SLT for F2F Physical Practical Component [Total F2F Physical Practical // Total F2F Physical + Total F2F Online + Total Independent Learning) × 100]	12.50
	C2		% SLT for F2F Online Practical Component [Total F2F Online Practical / (Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]	
	Note: * Indic ** For the SL'	sate the CLO based on the CLO's numbering in Item 8 ODL programme: Courses with mandatory practical rec	al Placement/ Practicum using 50% of Effective Learning Time (ELT)  quirements imposed by the programme standards or any related standards can be exempted from complying to the minimu	m 80% ODL delivery rule in
11		cial requirement or resources to deliver the , software, nursery, computer lab, simulation		

12	References (include required and further readings, and should be the most current)	1. Auteur. (2019). Food chemistry, New York: 3G E-Learning LLC, USA. 2. Garduno-Diaz, S. D. (2019). Food lipids: Chemistry, nutrition and biotechnology. Oakville, ON Canada: Delve Publishing. 3. Ozogul, Y. (2020). Innovative technologies in seafood processing. Boca Raton, FL: CRC Press. 4. Sanjeevi, S. (2020). Enzymes used In food and textile technologies. Oakville, ON: Delve Publishing. 5. Spizzirri, U. G., Cirillo, G. (. 1.)., & Kozlowski, M. A. (. 9.). (2018). Composites materials for food packaging. USA: Wiley. 6. Yamazaki, K. 1., & Bari, M. L. (2018). Seafood safety and quality. Boca Raton: CRC Press/Taylor & Francis Group.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)	Checked By	Approved By
Programme	1/3/2021		- Pan Pa	
Faculty	7/3/2021		DR. SHARIFAH NOOR EMILIA BINTI	DR. WAN MOND RAUHAN BIN WAN HUSSIN
JPPPU	14/7/2021		SYED JAMIL FAD'AAK Pensyarah Universiti	Pengerusi Bidang Perikanan dan Akuakultur Sarjana Sains Perikanan Tropika
Senate	25/7/2021		Fakulti Perikanan dan Sains Makanan	Sarjana Sains (Akuakultur) Fakulti Perikanan dan Sains Makanan
Version	1		Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date : 1/3/2021	Date : 7/3/2021





Course Costs/Costs		_	. N	la-					!				.1				
Course Classification.    Decide joung	1	Course Name: Biosecurity and Seafood Safety (Biosekuriti dan Keselamatan Makanan Laut)  Course Code: FISS203															
the same of this concer is to emphasive the impostment of trespector for all varieties of the provide students to the best management concept that can be used in against which development of the impostment for the plant of the development of the impostment for the plant of the plant in against the development of the impostment for the plant of the plant in a plant of the impostment of the plant in a plan	-	Cours	e Code:	FIS520	03												
with the development of an environment filtering yet outcomes for Topics covered scales a food chain projective from Commission demonstrated in Earnwell for the page planting of hearth, and/or a management and one of the page planting of hearth, and/or a management and operational specifications that make up heart protects around expansions, conditions true in the exhibitions of the exhibit		Cours	e Classification:	Electiv	ve (cor	e)					Rem	arks:					
Name(p) of Academic Soft    2   3	2	Synop	isis:	with t on hu aspec	he dev man he ts of be	elopme ealth ar est prac	ent of a nd also ctice w	an enviro method rhich inclu	nmen of im ides lo	tal frie provir ocal ar	endly and ng fish h nd globa	d sustain ealth, qu I nature	able sec ality and of aquac	tor. Topic I safety, a ulture, ro	s covere s well as les of sta	d include a food-chain perspective from chem managing such issues. Students will also lear keholders, compliance issues in the authoriza	nical contaminants in farmed fish and potentia n about good aquaculture practices (GAP) in o
Service and Vear offered Vear o				1	Dr. M	ok Wer	n Jye										
Senester and Visor officed. Visor Officed Senester Remota:  Credit Visor Senester device Senester should be able to:  At the end of the course, student should be able to:  COD Closely ability to determine the quality and safety parameters. (PLOS, Tc)  COD Closely by ability to determine the quality and safety parameters. (PLOS, Tc)  COD Closely by ability to determine the quality and safety parameters. (PLOS, Tc)  COD Closely by ability to determine the quality and safety parameters. (PLOS, Tc)  COD Closely by ability to determine the quality and safety parameters. (PLOS, Tc)  COD Closely by ability to determine the quality and safety parameters. (PLOS, Tc)  COD Closely by ability to determine the quality and safety parameters. (PLOS, Tc)  COD Closely by ability to determine the quality and safety parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  COD Closely by ability to determine the parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  Parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  Parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  COD Closely by ability to determine the quality parameters. (PLOS, Tc)  Cod Closely by ability to determine the quality parameters. (PLOS, Tc)  Cod Closely by ability to determine the quality parameters. (PLOS, Tc)  Cod Closely by ability to determine the quality parameters. (PLOS, Tc)  Cod Closely by ability to determine the quality parameters. (PLOS, Tc)  Cod Closely by abilit	3	Name	(s) of Academic Staff:	_													
Procession (consequence should be able to:  At the end of the course, student should be able to:  (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the quality and safety prometers, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX, CS) (CO) Septimability to determine the course of the programme Learning Dutcomes, (PLOX,	4	Seme	ster and Year offered:		ar Offe	red		Semes	ter		Ren	narks:					
At the end of the course, student should be able to:    Course Learning Outcomes   Course   Course   Cours	5	Credit	: Value:														
Course Learning Outcomes (CLO)  Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods  Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods    Course Learning Outcomes   Close   Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods   Course Learning Outcomes   Close   Course Learning Outcomes, Teaching Methods and Assessment Methods   Close   Course Learning Outcomes   Close	6																
Course Learning Outcomes (CLO)  Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods  Course Learning Outcomes to the Programme Learning Outcomes (PLO)  Teaching Methods  Assessment Methods  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course Learning Outcomes  Course  Course Learning Outcomes  Course  Cour																	
Course Learning Outcomes (CLO)  Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods.  Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods.  Course Learning Outcomes 10 The Programme Learning Outcomes, Teaching Methods and Assessment Methods.  Course Learning Outcomes 2				CL	.01	Evalua	ate bio	security	rotoc	ols an	d seafoo	od safety	measur	es. (PLO3	C5)		
Course Learning Outcomes (CLO)  Mapping of the Course Learning Dutcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods  Course Learning Dutcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods  Course Learning Dutcomes (PLO)  Course Learning Dutcomes (PLO)  Course Learning Dutcomes (PLO)  Course Learning Dutcomes (PLO)  Course Learning Dutcomes (PLO)  Teaching Methods  Assessment Methods  Assessment Methods  Assessment Methods  CLO1  CLO2  V V V V V V V V V V V V V V V V V V V				CL	.02	Displa	ıy abilit	ty to dete	rmine	the q	uality ar	nd safety	parame	ters. (PLC	2, P4)		
Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods    Course Learning				CL	.03	Formu	ulate a	framewo	rk wh	ich ca	n be use	d to reso	olve issu	es relatin	to bios	ecurity and seafood safety. (PLO7, A4)	
Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods    Course Learning																	
Programme Learning Outcomes (RLO)  Course Learning Outcomes  CLO1  CLO1  CLO2  V  CLO3  V  CLO3  CLO3  CLO3  CLO3  CLO3  CLO3  CLO4  CLO3  CLO4  CLO3  CLO4  CLO5		(CLO)															
Programme Learning Outcomes (RLO)  Course Learning Outcomes  CLO1  CLO1  CLO2  V  CLO3  V  CLO3  CLO3  CLO3  CLO3  CLO3  CLO3  CLO4  CLO3  CLO4  CLO3  CLO4  CLO5																	
Programme Learning Outcomes (RLO)  Course Learning Outcomes  CLO1  CLO1  CLO2  V  CLO3  V  CLO3  CLO3  CLO3  CLO3  CLO3  CLO3  CLO4  CLO3  CLO4  CLO3  CLO4  CLO5																	
Programme Learning Outcomes (RLO)  Course Learning Outcomes  CLO1  CLO1  CLO2  V  CLO3  V  CLO3  CLO3  CLO3  CLO3  CLO3  CLO3  CLO4  CLO3  CLO4  CLO3  CLO4  CLO5																	
Programme Learning Outcomes (RLO)  Course Learning Outcomes  CLO1  CLO1  CLO2  V  CLO3  V  CLO3  CLO3  CLO3  CLO3  CLO3  CLO3  CLO4  CLO3  CLO4  CLO3  CLO4  CLO5																	
Outcomes   T   C   D   D   D   D   D   D   D   D   D			Course Learning					Programi	ne Lea	arning	Outcom		_				
CLO2 V Demonstration, practical Lab Report  CLO3 Lab Report  CLO3 Lab Report  Lecture, Discussion Assignment, Presentation  Assignment, Presentation  Mapping with MOF  Cluster of Learning Outcomes  CAA  Indicate the primary causal link between the CLO and PLO by ticking 'V in the appropriate box.  PLO1-Knowledge & Understanding-CL, PLO2-Practical Skills-CAA, PLO8-Entrepreneurial Skills-CAB, PLO9-Leadership, Autonomy & Responsibility-C3F, PLO1-Digital Skills-C3D, PLO11-Numercy Skills-C3B  Transferable Skills (if applicable)  (Skills learned in the course of study which can be useful and utilized in other settings)  1 Personal Skills 2 Cognitive skills 3 Open-ended response (if any)  4				PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	9 OTA	PLO 7	B O1d	PLO 9	PLO 10	PLO 11		Teaching Methods	Assessment Methods
CLO3						٧											Test, Final exam
Mapping with MQF Cluster of Learning Unitcomes  Indicate the primary causal link between the CLO and PLO by ticking "V" in the appropriate box.  PLO1-knowledge & Understanding=CL. PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Profissionalism=CS, PLO7-Personal Skills=C3A, PLO3-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3D, PLO11-  Transferable Skills (if applicable)  (Skills learned in the course of study which can be useful and utilized in other settings)  1 Personal Skills 2 Cognitive skills 3  Open-ended response (if any)  4			CLO2		٧											Demonstration, practical	Lab Report
Mapping with MQF Cluster of Learning Outcomes  Indicate the primary causal link between the CLO and PLO by ticking "V" in the appropriate box.  PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO1-Digital Skills=C3D, PLO1- Numeracy Skills (if applicable) (Skills learned in the course of study which can be useful and utilized in other settings)  1  Personal Skills 2  Cognitive skills 3  Open-ended response (if any) 4			CLO3							٧						Lecture, Discussion	Assignment, Presentation
Mapping with MQF Cluster of Learning Outcomes  Indicate the primary causal link between the CLO and PLO by ticking "V" in the appropriate box.  PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO1-Digital Skills=C3D, PLO1- Numeracy Skills (if applicable) (Skills learned in the course of study which can be useful and utilized in other settings)  1  Personal Skills 2  Cognitive skills 3  Open-ended response (if any) 4																	
Mapping with MQF Cluster of Learning Outcomes  Indicate the primary causal link between the CLO and PLO by ticking "V" in the appropriate box.  PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO1-Digital Skills=C3D, PLO1- Numeracy Skills (if applicable) (Skills learned in the course of study which can be useful and utilized in other settings)  1  Personal Skills 2  Cognitive skills 3  Open-ended response (if any) 4																	
Mapping with MQF Cluster of Learning Outcomes  Indicate the primary causal link between the CLO and PLO by ticking "V" in the appropriate box.  PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO1-Digital Skills=C3D, PLO1- Numeracy Skills (if applicable) (Skills learned in the course of study which can be useful and utilized in other settings)  1  Personal Skills 2  Cognitive skills 3  Open-ended response (if any) 4																	
Mapping with MQF Cluster of Learning Outcomes  Indicate the primary causal link between the CLO and PLO by ticking "V" in the appropriate box.  PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO1-Digital Skills=C3D, PLO1- Numeracy Skills (if applicable) (Skills learned in the course of study which can be useful and utilized in other settings)  1  Personal Skills 2  Cognitive skills 3  Open-ended response (if any) 4																	
Mapping with MQF Cluster of Learning Outcomes  Indicate the primary causal link between the CLO and PLO by ticking "V" in the appropriate box.  PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO1-Digital Skills=C3D, PLO1- Numeracy Skills (if applicable) (Skills learned in the course of study which can be useful and utilized in other settings)  1  Personal Skills 2  Cognitive skills 3  Open-ended response (if any) 4																	
Cluster of Learning Outcomes  C3A  Indicate the primary causal link between the CLO and PLO by ticking 'V' in the appropriate box.  PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3D, PLO11- Numeracy Skills (if applicable)  (Skills learned in the course of study which can be useful and utilized in other settings)  1 Personal Skills 2 Cognitive skills 3 Open-ended response (if any)  4			Manning with MOF			C2											
Indicate the primary causal link between the CLO and PLO by ticking 'V' in the appropriate box.  PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3D, PLO1-Numeracy Skills=C3B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3D, PLO11-Numeracy Skills=C3B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3B, PLO11-Numeracy Skills=C3B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3B, PLO11-Numeracy Skills=C3B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy Skills=C3B, PLO11-Numeracy S			Cluster of Learning		СЗА												
PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3D, PLO11-Numeracy Skills=C3E  Transferable Skills (if applicable)  [Skills learned in the course of study which can be useful and utilized in other settings)  Distribution of Student Learning Time (SLT)			Outcomes							C4A							
PLO1-Knowledge & Understanding=C1, PLO2-Practical Skills=C3A, PLO3-Cognitive Skills=C2, PLO4-Communication Skills=C3C, PLO5-Interpersonal Skills=C3B, PLO6-Ethics & Professionalism=C5, PLO7-Personal Skills=C4A, PLO8-Entrepreneurial Skills=C4B, PLO9-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3D, PLO11-Numeracy Skills=C3E  Transferable Skills (if applicable)  [Skills learned in the course of study which can be useful and utilized in other settings)  Distribution of Student Learning Time (SLT)																	
PLOF-Ethics & Professionalism=C5, Numeracy Skills=C4A, PLOF-Personal Skills=C4A, PLOF-Entrepreneurial Skills=C4B, PLOF-Leadership, Autonomy & Responsibility=C3F, PLO10-Digital Skills=C3D, PLO11-Digital																	
Transferable Skills (if applicable) (Skills learned in the course of study which can be useful and utilized in other settings)  1 Personal Skills 2 Cognitive skills 3 Open-ended response (if any) 4																	
(Skills learned in the course of study which can be useful and utilized in other settings)  1 Personal Skills 2 Cognitive skills 3 Open-ended response (if any) 4				nalism=	C5,	PLU7-P	ersona	II SKIIIS=C4	A, PLI	U8-Ent	repreneu	Iriai Skiiis	=C4B, PI	.09-Leade	rsnip, Au	onomy & Responsibility=C3F, PEO10-Digital Skil	is=C3D, PtO11-
(Skills learned in the course of study which can be useful and utilized in other settings)  1 Personal Skills 2 Cognitive skills 3 Open-ended response (if any) 4																	
be useful and utilized in other settings)  2 Cognitive skills  3 Open-ended response (if any)  4 Distribution of Student Learning Time (SLT)	9	Trans	ferable Skills (if applica	ble)													
Open-ended response (if any)  Distribution of Student Learning Time (SLT)						h can	1	Persona	l Skills	5							
Open-ended response (if any)  4  Distribution of Student Learning Time (SLT)		be use	eful and utilized in othe	er settii	ngs)		2	Cognitiv	e skill	s							
Open-ended response (if any)  4  Distribution of Student Learning Time (SLT)							3										
0 Distribution of Student Learning Time (SLT)																	
0 Distribution of Student Learning Time (SLT)								ended res	ponse	(if any	)						
	10	Distrib	oution of Student Learn	ning Tir	ne (SI T	Γ)											

						Le	earning a	nd Teach	ing Activ	vities**		
	Causes Contact Outline and Subtonine	CI O*				Face-to-	Face (F2F	)			NEGE	Total SLT
	Course Content Outline and Subtopics	CLO*		Phy	rsical		Online	/ Techno		ediated	NF2F Independent Learning	
			<u> </u>						ronous)		(Asynchronous)	
1	Introduction to safety in the pre- and post- fishery - Relavance of biosecurity act and regulation in seafood industry.	CLO1	2	T	P	0	L	Т	Р	0	2	
2	Infection in aquaculture and seafood: Microbiology, parasite	CLO1	3				3				6	
3	Toxic elements in seafood: Mercury, arsenic, lead and cadmium, latest issues to human health, etc.	CLO1	3				3				6	
	Organic pollutants and Chemoterapeutants used in aquaculture: Trends in pesticide used, Risks to human health in aquaculture products, Future trends	CLO1	3				3				6	
5	Seafood quality: Factors affecting flesh quality in aquac	CLO1	3				3				6	
6	Quality management of seafood: Methods of improving aquaculture products quality, Husbandary techniques	CLO3	3			2					5	
7												
8	Lab 1: Microbiology quality	CLO2			2						2	
9	Lab 2: Parasites residues	CLO2			3						3	
10	Lab 3: Antibiotic residues	CLO2			2						2	
11	Lab 4: Seafood quality determination	CLO2			2						2	
12												
13												
14												
15												
16												
17												
18												
19												
20												
			I				- /				SUB-TOTAL SLT:	
	Continous Assessment	%		Phy	rsical	Face-to-	Online	e/ Techno	ology-me	ediated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Test	15			1						4	
2	Lab report	15									10	
3	Assignment	15									10	
4	Presentation	15			1						4	
5												
						Face to	Face (F2F	3			SUB-TOTAL SLT:	
	Final Assessment	%		Phy	rsical	race-to-	1	e/ Techno	ology-me	ediated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Final exam	40			2						8	
2												
3												
4												
5												
											SUB-TOTAL SLT:	
											SLT for Assessment:	
											GRAND TOTAL SLT:	1
								T. ( . ) E2	- O-li		T for F2F Physical Component: independent Learning) x 100)]	
A			[Total	F2F Phy:	sical /(To	tai F2F P	hysical +					
A B	(/Total F2F Onl.	ine + Total In						% SLT f	or Online	& Indep	pendent Learning Component:	73.
_	[{Total F2F Onli	ine + Total In						% SLT f Total F2	or Online PF Online	e & Indep + Total I % SL		73. 7.

	C2		% SLT for F2F Online Practical Component [Total F2F Online Practical / (Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]
	Pleasi Note:		al Placement/ Practicum using 50% of Effective Learning Time (ELT)
	** For the SL		quirements imposed by the programme standards or any related standards can be exempted from complying to the minimum 80% ODL delivery rule in
11		cial requirement or resources to deliver the , software, nursery, computer lab, simulation	

12	References (include required and further readings, and should be the most current)	1. Ades, G., Leith, K., & Leith, P. (2016). Food safety: A roadmap to success. London, UK: Elsevier. 2. Bai, J. A., & Rai, V. R. (2018). Trends in food safety and protection. Boca Raton: CRC Press. 3. Fiscal-Arjona, M. (2019). Food safety: Contaminants and toxins. Canada: Delve Publication. 4. Hanner, R. H., & Naaum, A. M. (2016). Seafood authenticity and traceability: A DNA-based perspective. London: Academic Press. 5. Hu, L. 1. (2019). Food safety: Rapid detection and effective prevention of foodborne hazards. New Jersey: Apple Academic Press. 6. Ozogul, Y. (2020). Innovative technologies in seafood processing. Boca Raton, FL: CRC Press. 7. Yarmazaki, K. 1., & Bari, M. L. (2018). Seafood safety and quality. Boca Raton: CRC Press/Taylor & Francis Group.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)		Checked By	Approved By
Programme	1/3/2021				<b>.</b>
Faculty	7/3/2021			En C	(185-14)
JPPPU	14/7/2021			DR. SHARIFAH NOOR EMILIA BINTI SYED JAMIL FAD'AAK	DR. WAN MOND RAUHAN BIN WAN HUSSIN Pengerusi Bidang Perikanan dan Akuakultur
Senate	25/7/2021			Pensyarah Universiti Fakulti Perikanan dan Sains Makanan	Sarjana Sains Perikanan Tropika Sarjana Sains (Akuakultur) Fakulti Perikanan dan Sains Makanan
Version	1			Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu
Effective Session	Sem I 2021-2022		Date :	1/3/2021	Date : 7/3/2021





1																		
	Cour	se Name:	risner	sheries Biosystems (Biosistem Perikanan)														
	Cour	se Code:	FIS521	13														
	Cour	se Classification:	Electiv	ve (cor	e)					Rem	arks:							
2	Syno	psis:	introd populi metab	luction ation w	to fish vith the cs of th	eries bi ir bioti e orgar	iosytem ic and al nisms w	s, com biotic e ill also	poner enviror be int	nt of fishe nment ba roduced	eries bios ased on tl . In additi	ystems, he biolog ion, the a	mechani gical and applicati	ism and t molecul on of the	ee and application in sustainable fisherier, function of biosystems in fisheries. The ar aspects. The integration of basic biol s systems towards sustainable fisheries as for management of fisheries resource	course wil logical info managem	I also look into the interaction betwo rmation with genomics, transcriptor	een fish mics and
$\dashv$			1	Dr. Tu	in Niuri	ıl Aimi I	Mat Jaa	for										
3	Name	e(s) of Academic Staff:	2	D1. 10	an ivaire		iviat Jaa	101										
٠	IValli	e(s) of Academic Stan.	3															
				Year Offered 2 Semester 1 Remarks:														
4	Seme	ester and Year offered:	Yea															
5	Credi	it Value:		3 3(3+0 )														
6	Pre-r (if an	requisite/ co-requisite ny):																
7	At th	ne end of the course, s	tudent	should	d be al	ole to:												
Γ			CL	.01	Evalua	ate the	concep	t, impo	ortance	e and ap	plication	of fisher	ies biosy	stems in	sustainable fisheries management. (PL	.O3, C5)		
			CL	O2	-										based biological and molecular aspect		4)	
			CL		<del>                                     </del>										abolomics of the organisms for manage			
				.03	FORM	nate ar	integra	atea a	dld Dds	sea on ge	enomics,	transcrip	otomics a	mu meta	spoiomics of the organisms for manage	ment. (PLC	J10, A4)	
	Cour: (CLO)	se Learning Outcomes )																
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ő						-8				es, reac	hing Metl							,
8		Course Learning Outcomes	PLO 1	PLO 2	PLO 3						nes (PLO)	PLO 10	PLO 11		Teaching Methods		Assessment Methods	
ő			PLO 1		· m	4 E	Program	nme Le	earning	Outcom	nes (PLO)						Assessment Methods  Test, Final exam	
0		Outcomes	PLO 1		PLO 3	4 E	Program	nme Le	earning	Outcom	nes (PLO)				Teaching Methods			
0		Outcomes CLO1	PLO 1		PLO 3	4 E	Program	nme Le	earning 2 07d	Outcom	nes (PLO)				Teaching Methods  Lecture, E-learning		Test, Final exam	
0		Outcomes  CLO1  CLO2	PLO 1		PLO 3	4 E	Program	nme Le	earning 2 07d	Outcom	nes (PLO)	PLO 10			Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
D		Outcomes  CLO1  CLO2	PLO 1		PLO 3	4 E	Program	nme Le	earning 2 07d	Outcom	nes (PLO)	PLO 10			Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
5		Outcomes  CLO1  CLO2	PLO 1		PLO 3	4 E	Program	nme Le	earning 2 07d	Outcom	nes (PLO)	PLO 10			Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
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		Outcomes  CLO1  CLO2	PLO 1		v PIO 3	4 E	Program	nme Le	earning 2 07d	Outcom	nes (PLO)	PLO 10			Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
5		Outcomes  CLO1  CLO2  CLO3  Mapping with MQF	PLO 1		PLO 3	4 E	Program	nme Le	∠ Old.	Outcom	nes (PLO)	PLO 10			Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
		Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning	PLO 1		v PIO 3	4 E	Program	nme Le	earning 2 07d	Outcom	nes (PLO)	PIO 10			Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
		Outcomes  CLO1  CLO2  CLO3  Mapping with MQF	PLO 1		v PIO 3	4 E	Program	nme Le	∠ Old.	Outcom	nes (PLO)	PLO 10			Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
		Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes		PLO 2	м Ода V	PLO 4	Program S O d d	PLO 6	∠ Old V	δ Outcom δ ο ο ο ο ο ο ο ο ο ο ο ο ο	nes (PLO)	√ N P P D 10			Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
		Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes	sal link	PLO 2	v V C2	FO aud	Program of a control of the control	nme Le	V C4A	© Outcom	ones (PLO)	V V C3D	PLO 11		Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion		Test, Final exam Assignment, Presentation	
		Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und	sal link	C O O O O O O O O O O O O O O O O O O O	V C2 C2	F F F O and	Program of a state of the state	9 Old	C4A  C4A	© Outcom	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning  Lecture, E-learning, Discussion  Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
		Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau	sal link	C O O O O O O O O O O O O O O O O O O O	V C2 C2	F F F O and	Program of a state of the state	9 Old	C4A  C4A	© Outcom	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
	Trans	Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und	sal link erstand	C O O O O O O O O O O O O O O O O O O O	V C2 C2	F F F O and	Program of a state of the state	9 Old	C4A  C4A	© Outcom	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
	(Skill:	Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und PLO6-Ethics & Profession Numeracy Skills=C3E	sal link erstand halism=	betwee	C2  C2  PLO7-P	F F F O and	Program of a state of the state	9 Od a sicking C3A, Fl	C4A  V' in th	© Outcom	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
	(Skill:	Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und PLO6-Ethics & Profession Numeracy Skills-C3E	sal link erstand halism=	betwee	C2  C2  PLO7-P	to and LO and LPractice	Program  Shape of the state of	9 Od a strict of the strict of	C4A  C4A  C4A  C4A	© Outcom	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
	(Skill:	Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und PLO6-Ethics & Profession Numeracy Skills=C3E	sal link erstand halism=	betwee	C2  C2  PLO7-P	F F Old A Decision of the Control of	Program  o Q a a series of the	onme Lee	C4A  C4A  C4A  C4A	© Outcom	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
9	(Skill:	Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und PLO6-Ethics & Profession Numeracy Skills=C3E	sal link erstand halism=	betwee	C2  C2  PLO7-P	F POIL CO and Practice Practic	Programm on O O O O O O O O O O O O O O O O O O	nme Le	V C4A  C4A  V' in th	e approg	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
	(Skill:	Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und PLO6-Ethics & Profession Numeracy Skills=C3E	sal link erstand halism=	betwee	C2  C2  PLO7-P	F POIL CO and Practice Practic	Program  o Q a a series of the	nme Le	V C4A  C4A  V' in th	e approg	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
	(Skill:	Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und PLO6-Ethics & Profession Numeracy Skills=C3E	sal link erstand halism=	betwee	C2  C2  PLO7-P	E.O and Practice resonal 1 2 3 Open-d	Programm on O O O O O O O O O O O O O O O O O O	nme Le	V C4A  C4A  V' in th	e approg	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	
	(Skill:	Outcomes  CLO1  CLO2  CLO3  Mapping with MQF Cluster of Learning Outcomes  Indicate the primary cau PLO1-Knowledge & Und PLO6-Ethics & Profession Numeracy Skills=C3E	sal link erstand halism=	betwee	C2  C2  PLO7-P	E.O and Practice resonal 1 2 3 Open-d	Programm on O O O O O O O O O O O O O O O O O O	nme Le	V C4A  C4A  V' in th	e approg	ones (PLO)	01 01 01 V	Plot	ation Skill	Teaching Methods  Lecture, E-learning Lecture, E-learning, Discussion Demonstration, Discussion		Test, Final exam Assignment, Presentation Project, Presentation	

						Le	earning a	nd Teach	ning Activ	vities**		
	Communication of the contract	C! O*				Face-to-l	ace (F2F	)			NEAE.	Total SLT
	Course Content Outline and Subtopics	CLO*		Phy	sical		Online		ology-me ronous)	diated	NF2F Independent Learning	TOTAL
			L	Т	Р	0	L	T	P	0	(Asynchronous)	
1	Introduction (concept, importance of fisheries biosystems for management)	CLO1	2					·			2	
2	Component of fisheries biosystems (biological and ecological components)	CLO1	2								2	
3	Mechanisms and functions (biological pathway, molecular information, biological response)	CLO1	4			4	2				10	
4	Interaction between fish and environment (biotic, abiotic)	CLO2	4			3	1				9	
5	Molecular approach (genomics, transcriptomics, metabolomics)	CLO3	2			4	1				7	
6	Application of fisheries biosystems towards sustainable fisheries management	CLO3	3			2	2				7	
7												
8												
-												
10												
11												
12												
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14												
15												
16												
17												
18												
19												
20												
											SUB-TOTAL SLT:	73
						Face-to-l	ace (F2F	)			NF2F	
	Continous Assessment	%			sical		Online		ology-me ronous)	ediated	Independent Learning for Assessment (Asynchronous)	
2	Test Assignment	10			1						12	
3	Presentation 1	10			1						3	
4	Project	15									12	
5	Presentation 2	10			1						3	
											SUB-TOTAL SLT:	37
	Final Assessment	%		Phy	sical	Face-to-l	Online	e/ Techno	ology-me	ediated	NF2F Independent Learning for Assessment (Asynchronous)	
1	Final exam	40			2						8	
2												
3												
4												
5											SUB-TOTAL SLT:	10
											SLT for Assessment:	47
	GRAND TOTAL								GRAND TOTAL SLT:	120		
A	% SLT for F2F Physical Comp [Total F2F Physical /(Total F2F Physical + Total F2F Online + Total Independent Learning) »							T for F2F Physical Component:	29.17			
В	**							% SLT f	or Online	& Indep	pendent Learning Component:	70.83
С	[(Total F2F Onl	ıne + Total In	depende	nt Learn	ing) /( To	otal F2F F	nysical +			% SL	Independent Learning) x 100] T for All Practical Component:	
C1									% SL	T for F2F	tical + % F2F Online Practical] Physical Practical Component	
C2	[Total F2F Physical Practical /( Total F2F Physical + Total F2F Online + Total Independent Learning) × 100)]   Total F2F Online Practical / (Total F2F Physical + Total F2F Online + Total Independent Learning) × 100]											
		[Tota	ıı F2F Onl	ine Praci	tical / (Ti	otal F2F F	nysical -	F Total F2	2F Online	+ Total I	Independent Learning) x 100]	

	Please tick (v) if this course is Industrial Training/ Clinical Placement/ Practicum using	50% of Effective Learning Time (ELT)
	Note:	
	<ul> <li>Indicate the CLO based on the CLO's numbering in Item 8</li> <li>For ODL programme: Courses with mandatory practical requirements imposed by the progr the SLT.</li> <li>L = Lecture, T = Tutorial, P = Practical, O = Others</li> </ul>	imme standards or any related standards can be exempted from complying to the minimum 80% ODL delivery rule in
11	Identify special requirement or resources to deliver the course (e.g., software, nursery, computer lab, simulation room etc)	

12	References (include required and further readings, and should be the most current)	1. Bourlat, S. J. (2016). Marine genomics: Methods and protocols. New York: Humana Press/Springer Science+Business Media LLC. 2. Clark, D. P., McGehee, M. R., & Pazdernik, N. J. (2019). Molecular biology (Third edition.). London, United Kingdom: Academic Press. 3. Foulkes, N. S. (2016). Genetics, genomics and fish phenomics. Cambridge, MA: Academic Press Inc. 4. Gabriel, K. R. (2020). Bioinformatics and genomics: Concepts and protocols. New York: Intelliz Press. 5. Pernice, M., & Pulpitel, T. (2016). Gene expression & molecular biology. New York: Intelliz Press LLC.
13	Other additional information (if applicable)	

	Date of Approval	Notes of Improvements (if any)		Checked By	Approved By
Programme	1/3/2021				-h
Faculty	7/3/2021			En Ci	
JPPPU	14/7/2021			DR. SHARIFAH NOOR EMILIA BINTI SYED JAMIL FAD'AAK	DR. WAN MOND RAUHAN BIN WAN HUSSIN Pengerusi Bidang Perikanan dan Akuakultur
Senate	25/7/2021			Pensyarah Universiti Fakulti Perikanan dan Sains Makanan	Sarjana Sains Perikanan Tropika Sarjana Sains (Akuakultur) Fakulti Perikanan dan Sains Makanan
Version	1		Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	Universiti Malaysia Terengganu 21030 Kuala Nerus, Terengganu	
Effective Session	Sem I 2021-2022		Date :	1/3/2021	Date : 7/3/2021