r																			
1	Course Name: SMART MANUFACTURING																		
	Course Co	de.	SEB36																
	Course Cl	assification:)																
2	Synopsis:		This c manu config	ourse facturi juratio	will cov ing and on level,	ver Indu autono , cognit	ustry 4. omous ion lev	.0 fram roboti vel, cyb	ework c are c er leve	and ar overed I, conv	chitect briefly ersion	ure. Ke in 5 m level, d	ey elen najor to connec	nents i opics. I tion le	n Industry 4.0 such as system integration Besides that, the architecture of Industry vel are included in this course.	 simulation, big data, Internet of Things 4.0 implementation which consists of 5 	s, additive levels;		
			1	Assoc	. Prof.	Dr. Mu	hamad	l Husai	ni Abu	Bakar									
3	Name(s)	2	Dr Ah	amad 2	Zaki Mo	bhame	d Noor												
			3																
							I												
4	Semester	and Year offered:	Ye	ar Offe	ered	3	Sem	ester	1	Rema	rks:								
5	5 Credit Value:			4															
6	Pre-requi (if any):	site/ co-requisite																	
7				CLO1 Describe the importance of smart manufacturing components in industrial plant (P1 PI O4)															
				CLO1 Describe the importance of smart manufacturing components in industrial plant. (P1, PLO4)															
			CL	CLO2 Assemble appropriate smart manufacturing components for industrial plant. (P3, PLO5)															
			С	CLO2 Propose smart manufacturing applications towards sustainability of the opvisormant (A2, DLOS)															
	Course Le	arning Outcomes																	
	(020)																		
	SI.	13																	
		~																	
8	Mapping of the Course Learning Outcomes to the Programme Learning Outcomes, Teaching Methods and Assessment Methods																		
0	B			ing Outcomes to the Programme Learning Outcomes, reaching Methods and Assessment Methods															
						Progr	amme	Learni	ng Out	comes	(PLO)								
		Course Learning		2	m	4	5	9		~	6	0	-		Teaching Methods	Assessment Methods			
		Outcomes	ЪГО	LO.	LO.	LO.	LO.	5LO	07	SLO.	SO10	LO 1	101						
			_	-	-	_	_	-	-	-	-	₽.							
		CLO1				v									Practical	Practical Tests			
		CLO2					V								Practical	Technical Reports			
		CLO3						v							Practical	Project			
		Mapping with				C3A	C3A	C3B											
		MQF Cluster of													1				
		Learning													4				
		Outcomes																	
		Indicate the primary	causal	link be	tween t	he CLO	and PLO	O by tic	king '√	in the a	appropr	iate bo	x.						
		C1 = Knowledge & U	ndersta	nding,	C2 = Cc	gnitive	Skills, C	3A = Pr	actical	Skills, C	3B = Int	erperso	nal Ski	ls, C3C	= Communication Skills, C3D = Digital Skills,				
		C3E = Numeracy Ski	ls, C3F	= Leade	ership, A	Autonon	ny & Re	sponsit	oility, C	IA = Pei	rsonal S	kills, C 4	B = Ent	repren	eurial Skills, C5 = Ethics & Professionalism				
	Tror -f-	ble Chille //f	hla)																
Э	ransfera	uie Skills (If applica	ue)														1		
	(Skills learned in the course of study which can 1 Personal Skills																		
	be useful and utilized in other settings) 2 3 Open-ended response (if any)																		
						4	Proble	em solv	/ing										

10 Distribution of Student Learning Time (SLT)

Note: This SLT calculation is designed for home grown programme only.

						Total SLT							
	Course Content Outline and Subtopics				Fa								
				Phy	sical		Onl media	ine/ Te ated (S	echnolo ynchro	ogy- onous)	Independent Learning (Asynchronous)	Total SET	
	1.0 Introduction to Smart		L	Т	Р	0	L	Т	Р	0			
1	Manufacturing 1.1 Identification of smart manufacturing component in various industries 1.2 Proposal of smart manufacturing plant for SME	CLO1	4		6		8				6		
2	 2.0 Sensor Application in Smart Manufacturing 2.1 Identification of appropriate sensor for manufacturing plant 2.2 Configuration of sensor for smart manufacturing 2.3 Sensor network design for smart manufacturing 	CLO1			8		12				6		
3	 Cyber-physical System in Manufacturing 1 Cyber-physical system model Cyber-physical system control 	CLO2			4		16				6	•	
4	 4.0 Big Data Application in Smart Manufacturing 4.1 Data collection from manufacturing plant 4.2 Feature identification from data 4.3 Data visualization selection tools 	CLO2			4		10				6		
5	 5.0 Artificial Intelligence (AI) Implementation in Smart Manufacturing 5.1 Machine learning model development for manufacturing process 5.2 Decision making strategy design using AI 	CLO3			8		14				6		
6	6.0 Improving Life on the Factory Floor with Smart Technology (SDG 8) 6.1 Life on the Factory Floor from 1700 to Today 6.2 The Smart Manufacturing Factory Floor 6.3Three Essential Job Types in Smart Manufacturing	CLO3			8		10				6		
7													
8													
9													
10													
11													

		12													
		13													
		14													
		15													
		10													
		10					-								
		17													
		18													
		19													
		20													
							1	1		1	1		SUB-TOTAL SLT:	148	
					Face-to-F				ace (F2F)				NF2F		
			Continous Assessement	%		Phy	ysical		On medi	line/ Te ated (S	echnol Synchro	ogy- onous)	Independent Learning for Assessment (Asynchronous)		
		Continous Assessement 1 Practical Tests 2 Technical Reports 3 Project with Presentation 4		30	2								2		
		2	Technical Reports	30									2		
		3	Project with Presentation	40	40 2								4		
		4													
		5													
								12							
					Fac					2F)			NF2F		
			Final Assessement	%	% Physical Online/ Technology- mediated (Synchronous) Assessment (Asyn								Assessment (Asynchronous)		
		1													
		2													
		3													
		4													
		5													
		SUB-TOTAL SLT:									0				
													SLT for Assessment:	12	
												- /	GRAND TOTAL SLT:	160	
		Α		[Total F2F Ph	ysical ,	/(Total	F2F Ph	ysical ·	+ Total	F2F Or	nline +	% SL1 Total I	<pre>[for F2F Physical Component: ndependent Learning) x 100)]</pre>	28.75	
		в	[(Total F2F Online + Total Inde	ependent Lea	rning) ,	/(Toto	al F2F P	hysical	% SL + Tota	T for O <i>I F2F O</i>)nline &)nline +	k Indep - <i>Total</i>	endent Learning Component: Independent Learning) x 100]	71.25	
		с								[0/ F2F	Dhusia	% SL	T for All Practical Component:	23.75	
		C1	IT-+ 1 505	Dhuciaal Dr.	tion! !!	Tet-	E25 01	wind	Tot-	525 0	% SLT f	or F2F	Physical Practical Component	23.75	
		C2	liotal F2F	Physical Prac	ucal /(iotal	rzr PN	ysical +	- rotal	-2r Un	% SL	T for F2	Pronline Practical Component	0.00	
				2F Online Pro	ictical .	/ [] 0t0	11 F2F P	nvsical	+ 1010	1 F2F 0	nine +	- Total	Independent Learnina) x 1001		, 1
		Please	tick (V) if this course is Industrial Training/ C	Clinical Placer	nent/	Practio	cum usi	ng 50%	% of Eff	ective	Learni	ng Tim	e (ELT)		
		Note:													l.
		* Indica	ate the CLO based on the CLO's numbering in Item	8 al requirement	c impor	od by t	the proc	ramme	standa	rds or a	ny rola	tod star	adards can be exempted from co	molying to the minimum 90%	
		ODL de	livery rule in the SLT.		- mpos	CU DY I	and brog		. stanud		, icid	icu sidi	aaras can be exempted nom to	mering to the minimum oo //	
11	Identify s course (e room etc	pecial r .g., soft)	equirement or resources to deliver the ware, nursery, computer lab, simulation	Matlab Soft	ware a	and C	ompute	er Lab							
12	Reference should be	es (incli the m	ude required and further readings, and ost current)	1. Anthony	Taran	tino (2	2022).	Smart	Manu	facturi	ng: Th	ie Lea	n Six Sigma Way,WILEY		
13	Other add	ditional	information (if applicable)												
	Note: Num	hber of I	PLO indicated is purely for illustration purposes or	l Inly and the num	nber is	subiect	ed to th	e currio	culum d	esign.					
		011		, are non					u						