COURSE INFORMATION

School/Faculty:	**Faculty of Computing**		
Program name:	**Bachelor Computer Science (Data Engineering) with Honors**		
Course code:	**SECP 2613**	**Academic Session/Semester:**	**2024-2025/2**
Course name:	**System Analysis and Design WBL**	**Pre/co requisite (course name and code, if applicable):**	**None**
Credit hours:	**3**		

Course synopsis	The main focus of this course is to provide a practical approach of systems analysis and designing skills for the students using structured and object-oriented methodology. Hence the course enables students to study information system requirements for any system application within an organizational context. The contents are sequentially organized directly from planning, analysis, designing and implementation phases. From the resulting output of the planning and analysis phase shall enable students to form input, output and interface design. Hence a prototype design can be demonstrated.			
Course coordinator (if applicable)	Dr. Aryati Bakri			
Course lecturer(s)	**Name**	**Office**	**Contact no.**	**E-mail @utm.my**
	Dr. Aryati Bakri	*N28 402-10*		*aryati*
	Dr. Muhammad Iqbal Tariq Bin Idris	*N28A 05-20*		*miqbaltariq*

Mapping of the Course Learning Outcomes (CLO) to the Programme Learning Outcomes (PLO), Teaching & Learning (T&L) methods and

Assessment methods:

No.	CLO*	PLO	**Taxonomies and ***generic skills	T&L methods	****Assessment methods
CLO1	Apply the concepts of system analysis and design to solve case studies.	PLO1 (KW)	C4	Lecture, Active Learning	T, Q, F, R
CLO2	Design phase based on requirement in real-world case study using structured methodology.	PLO2 (AP)	C5	Lecture, Active Learning, Lab Work	PR, Pr,
CLO3	Construct system requirements, system analysis, system design and system testing with state-of-the-art methods and tools for a real-world problem.	PLO3 (PS)	C6	Work Based Learning (WBL)	PR, Pr,
CLO4	Ability to establish good rapport, interact with others, work effectively in a team and comprehend the interchangeable role of leaders and followers with team members.	PLO7 (TW)	TW1, TW2	Active learning	Peer

This is the basic mapping required for the CI. Any added information is allowed (extra columns for weight or other elements) provided this is made consistent for all CI at program/school/faculty level.
*Up to 5 CLO
Refer **Taxonomies of Learning and ***UTM's Graduate Attributes for UG and Generic Skills for PG, where applicable for measurement of outcomes achievement
****T – Test; Q – Quiz; HW – Homework; Asg – Assignment; PR – Project; Pr – Presentation; F – Final Exam etc.
C-Coaching, SL-Service Learning, CE-Community Engagement, PR-Project, Peer-Peer Assessment, Pr-Presentation, R-Report, App-Working Application, L-Logbook

Indicate the primary causal link between the CLO and PLO by ticking 'v' in the appropriate box.
C1 = Knowledge & Understanding, **C2** = Cognitive Skills, **C3A** = Interpersonal Skills, **C3B** = Interpersonal Skills, **C3C**= Communication Skills, **C3D** = Digital Skills, **C3E** = Numercy Skills, **C3F** = Leadership, Autonomy & Responsibility, **C4A** = Personal Skills, **C4B** = Enterpreneurial Skills, **C5** = Ethics & Professionalism

Details on Innovative T&L practices:

No.	Type	Implementation
1	Active learning	Conducted through in-class activities
2	Lab work	Conducted based on hands on modelling tool
3	Work Based Learning (WBL)	Conducted based on given real world problem. The students must manage their projects by submitting specified deliverables based on the given problem.
4	Self & Peer Assessment	Self and peer review assessment at the end of each project phase for the team members to assess their teammates for their teamwork and leadership quality.
5	Industry assessment	One industry assessment at the end of the semester for the industry to assess project quality.

Transferable skills (generic skills learning in course of study which can be useful and utilised in other settings) :

Student learning time (SLT) / Effective Learning Time (ELT) details:

Week/	Course Content Outline and Subtopics	CLO*	Learning and Teaching Activities		TOTAL SLT
			Face-to-Face (F2F)	Non F2F Independent Learning	

Meeting	Course Content Outline and Subtopics	CLO	Physical				Online (Synchronous)				Online (Asynchronous)	Others	SLT
			L	T	P	O	L	T	P	O			
Week 1	Course Overview **TOPIC I SYSTEMS ANALYSIS FUNDAMENTAL** Part 1 ● Organizational impact on Information System ● Types of Information Systems Part 2 ● Systems analyst role Part 3 ● Types, trend and approach towards developing information system						2				1	2	5
Week 2	**TOPIC II PROJECT PLANNING PROCESS** Part 1 ● Project feasibility studies ● Project initiation Part 2 ● Project planning and control ● Project schedules and techniques (Gantt Chart, PERT Chart, Critical Path Method) Part 3						2				1	3	6
Week 3	● Project cost management (CBA) ● Project Management						2				1	3	6
Week 4	**TOPIC III INFORMATION REQUIREMENT TASK** Part 1 ● Information Gathering – Interactive Methods								2		2	3	7
Week 5	Part 2 ● Information Gathering – Unobtrusive Methods								2		2	3	7

Week 6	**TOPIC IV THE ANALYSIS PROCESS**		2						2		2	2	8
Week 7	Part 1 ● Introduction to Data Flow Diagrams (DFD) Part 2 ● DFD Errors Part 3 ● From Logical to Physical DFD ● Partitioning DFD **INDUSTRY DAY** **(Note: Project & P1 briefing)**		2						2		2	2	8
Week 8	Mid-Semester Break												0
Week 9	Part 4 ● Design Structure Chart ● Describing Process Specification and techniques (Decision trees, Decision table, Structured English) (Note: P1 submission, P2 briefing)		2						2		2	3	9
Week 10	**TOPIC V THE DESIGN TASK** Part 1 ● Designing User Interfaces ● Designing Effective Output ● Designing Effective Input Part 2 ● Element of Architecture Design ● Architectural Components ● Client Server Architecture ● Web Architecture (Note: P2 submission, P3 briefing)		2						2		2	3	9

Week 11	**TOPIC OBJECT ORIENTED** Object-Oriented Systems Analysis and Design Use Case Driven Architecture Centric Unified Modeling Language The Rational Unified Process (RUP) Three Fundamental UML Diagrams Use Case Diagram Sequence Diagram Activity Diagram (Note: P3 submission, P4 briefing)		2						2		2	3	9
Week 12			2						2		2	2	8
Week 13			2						2		2	2	8
Week 14	**TOPIC VI SYSTEMS IMPLEMENTATION** Part 1 ● User Testing and acceptance test ● Training plan & strategies Part 2 ● Implementation plan & strategies		2						2		2	2	8
Week 15	Project assessment and group presentation (P4 submission) **INDUSTRY DAY**		1								4	2	7
											SUB-TOTAL SLT :		**105**

Continous Assessment	**%**	**Face-to-Face (F2F)**		**NF2F Independent Learning for Assessment**		**TOTAL SLT**
		Physical	**Online (Synchronous)**	**Online (Asynchronous)**	**Others**	

1	Project Industry (Phase 1-Phase 4)	25	16	1			17
2	Academic writing and presentation	7	12	4			16
3	Peer Review	5	1				1
3	Assigment	8	2	1			3
3	Quiz (x1)	5	1				1
					SUB-TOTAL SLT :		**38**

Summative Assessment		**%**	**Face-to-Face (F2F)**		**NF2F Independent Learning for Assessment**		**TOTAL SLT**
			Physical	**Online (Synchronous)**	**Online (Asynchronous)**	Others	
1	Industry Assesment	5	2.5				2.5
2	Mid Term	15	2				2
3	Final Exam	30	2.5				2.5
	Total	100					
					SUB-TOTAL SLT :		**7**
					SLT for Assessment:		**45**
					GRAND TOTAL SLT:		**150**

A	% SLT for F2F Physical Component [(Total F2F Physical)/(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100)]	37.33
B	% SLT for Online & Independent Learning Component : [(Total F2F Online+Total Independent Learning)/(Total F2F Physical+Total F2F Online+ Total Independent Learning) x 100]	62.67

C	%SLT for Online Component: [(Total F2F Online+Total Online NF2F Independent Learning)/(Total F2F Physical+Total F2F Online+ Total Independent Learning) x 100]	39.33
D	% SLT for All Practical Component [% F2F Physical Practical + % F2F Online Practical]	13.33
D1	% SLT for F2F Physical Practical Component [(TotalF2F Physical Practical/(Total F2F Physical+ Total F2F Online+Total Independent Learning) x100)]	0.00
D2	% SLT for F2F Online Practical Component [Total F2F Online Practical/(Total F2F Physical + Total F2F Online + Total Independent Learning) x 100]	13.33
Please tick (/)if this course Industrial Training/ Clinical Placement/ Practicum using 50% of Effective Learning Time (ELT) Note : ** For ODL Programme : Courses with mandatory practical requirement imposesd by programme standards or any related standards can be ecempted from complying to the minimum 80% ODL delivery rule inthe SLT.		

Identify special requirement or resources to deliver the course (e.g. software, nursery, computer lab, simulation room etc)
Agile Tool and other related tools or platforms for software developments as instructed by the course lecturer

References (include required and further readings, and should be the most current)

Main references

Kendall & Kendall. (2023). System Analysis & Design, 11th edition, Essex: Pearson Education Limited.

Additional references

Valacich, George & Hoffer (2021). Essentials of Systems Analysis & design, 6th Edition, Essex: Pearson Education Limited.
Tilley & Rosenblatt (2017). System Analysis and Design. 11th Edition, Singapore. Cengage Technology Edition.Online https://elearning.utm.my

Other additional information (if applicable)

Academic honesty and plagiarism: *(Below is just a sample)*

Assignments are individual tasks and NOT group activities (UNLESS EXPLICITLY INDICATED AS GROUP ACTIVITIES).
Copying of works (texts, lab results, etc.) from other students/groups or from other sources is not allowed. Brief quotations (texts in quotes) are allowed with the sources indicated. Existing texts should be paraphrased with your own words to explain what you understand. It is not acceptable to retype existing texts and just acknowledge the source as a reference. Students who submit copied work will obtain zero for the assignment and exams and disciplinary steps may be taken by the faculty. It is also unacceptable to do somebody else's work, to lend your work to them or to make your work available to them to copy.

Other additional information (if applicable)

1. Attendance/participation is compulsory and will be taken during every lecture and meeting session. Students with less than 80% of total participation will be barred from presenting their project.

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2. Students are required to behave and follow the dressing regulation and etiquette which has been stated in the University ruling while in class, in lab, and in exam hall*.
3. Any form of plagiarism is NOT ALLOWED. Students who are caught cheating for copying other students' assignments/lab exercises will get zero mark.
4. Exercises will be given in class and some may be taken for assessment. Students who do not take the exercise will lose the marks for the exercise.
5. Students who are absent will not be allowed to conduct the project demo and present the final assessments, except to those who are sick and submit medical certificates which are confirmed by UTM panel doctors. Make up demo can only be given within one week from the initial date of demo.
6. Iterative demo must be shown on the due dates. Some points will be deducted for the late demo only with lecturers' permission and accepted justification.

*Note: This course has no final exam and classes are conduced hybrid as approved by the faculty/university until further notice

Disclaimer:

ELT = (Theory + Industrial Guidance + Assessment) x 50%

Jumlah Kredit bagi LI/Praktikum = ELT/40 Notional Hours