	deterministic Finite State Machine, Regular Languages, Regular Expression, pumping Lemma, Context Free Grammar, FSM Summary, Context-Free Languages, Ambiguity).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- Readings, self-learning, panel discussions. - Classroom exercises and activities. - Guiding students to some websites to benefit from them to develop abilities. - Holding research seminars through which some problems are explained and analyzed and the mechanism for finding solutions. Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	80	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	45	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	- General information about Computation. - Representing Information. - Computational Problems. - Characteristics of computational problems - Theory of computation
Week 2	- Language Concepts - Grammar Concepts - Chomsky Classification of Grammars - Finite State Machine - How does a Automaton work ?
Week 3	- Machine view of FA - How to define a FA - FA diagrams - Characteristics of state machine - Deterministic finite automaton DFA - Examples of DFA .
Week 4	- Non deterministic Finite State Machine (NFA) - NFA operation - Examples of NFA - DFA Vs. NFA
Week 5	- Equivalence of Machines - Example of equivalent machines - Proof by construction

Week 6	- Properties of Regular Languages - Definition (Regular Languages) - Union Operation & Examples - Concatenation Operation & Examples - Star Operation & Examples
Week 7	- Reversal Operation & Examples - Complement Operation & Examples - Intersection Operation & Examples - De Morgan's Law & Example
Week 8	- DFA Minimization - Equivalence theorem. - Draw the equivalent DFA - Minimization of DFA Table Filling Method
Week 9	- Myhill-Nerode Theorem - Regular Languages & examples - Regular Expression & examples.
Week 10	- automata theory (Basics , Inductions , Precedence of Operators , Examples , Identities , Facts) - Equivalence of RE's and Automata .
Week 11	- Converting a RE to an ε-NFA - Form of ε-NFA s Constructed - RE to ε-NFA : (Union, Concatenation, Closure, Examples) - DFA to RE - Algebraic Laws for RE's
Week 12	- Convert Automata into RegEx using State Elimination - pumping Lemma - Theorem to Proof Language is Regular - Theorem to Proof Language is Not Regular - Pigeonhole Principle and FSA
Week 13	- Theorem – Long Strings - Line of Reasoning - Examples of Pumping Lemma
Week 14	- Context Free Grammar - FSM Summary - Context-Free Languages - Chomsky Hierarchy
Week 15	- Derivation of Context-Free Languages - Derivation Trees , Examples - Ambiguity , Examples .
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	none

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	(Michael Sipser), Introduction to the Theory of computation (Third Edition).	Yes
Recommended Texts	Theory of Computation Simplified , (Varsha H. Patil ، Vaishali S. Pawar ،Swati A. Bhavsar) , 2022 .	No
Websites	https://elc.uobasrah.edu.iq/enrol/index.php?id=72	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.