

COURSE INFORMATION

School/Faculty:	Computing/Engineering	Page:	1 of 4
Program name:	Bachelor of Computer Science (Software Engineering)		
Course code:	SCSJ3203	Academic Session/Semester:	2020/21/02
Course name:	Theory of Computer Science	Pre/co requisite (course name and code, if applicable):	Nil
Credit hours:	3		

Course synopsis	The goal of this course is to provide students with an understanding of basic concepts in the theory of computation. This course introduces students to formal languages and automata theory. It will emphasize on languages, grammars and abstract machines i.e. Regular Language, Context Free Language, Regular Grammar, Context Free Grammar, Finite Automata, Push Down Automata, and Turing Machine. The course will also provide practice on the acceptability of input string by these machines. At the end of the course, students should be able to apply the theory in constructing these abstract machines and testing them with the right input strings.			
Course coordinator (if applicable)	Dr Haswadi Bin Hasan			
Course lecturer(s)	Name	Office	Contact no.	E-mail @utm.my
	Dr Zalmyah Binti Zakaria	N28A, Level 5	0177384684	zalmyah@utm.my
	Dr Suriati Binti Sadimon	N28, Level 2	0197464608	suriati@utm.my
	Dr Haswadi Bin Hasan	N28, Level 4	0197305636	haswadi@utm.my

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

No.	CLO	PLO (Code)	*Taxonomies and **generic skills	T&L methods	***Assessment methods
CLO1	Comprehend the theory of regular language and construct finite state machines and the equivalent regular expressions.	PLO1, PLO5	C3, P3	Lecture, active learning, tutorial	Tu, Q, T
CLO2	Comprehend the theory of context-free language and construct pushdown automata and the equivalent context-free grammars.	PLO1, PLO5	C3, P3	Lecture, active learning, tutorial	Tu, Q, T, F
CLO3	Comprehend the theory of enumerable language and construct the Turing machines.	PLO5	P3	Lecture, active learning, tutorial	Tu, Q, F
CLO4	Apply the theory of computation in solving the real-world problems.	PLO7	A3	Project-based learning	A, PR
Refer *Taxonomies of Learning and **UTM's Graduate Attributes, where applicable for measurement of outcomes achievement ***L – Lecture; T – Tutorial; TE – Test ; PS – Problem Solving; PR – Project ; F – Final Exam					

Details on Innovative T&L practices:

No.	Type	Implementation
1.	Active learning	Conducted through in-class activities and tutorials

Prepared by: Name: Signature: Date:	Certified by: Name: Signature: Date:
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Weekly Schedule:

Week 1 (14/3/2021)	1.0 Mathematical preliminaries 1.1 Theory of Set
Week 2-3 (21/3/2021 & 28/3/2021) Tutorial 1 - Tutorial 2 (Handwritten)	2.0 Languages 2.1 Language and String 2.2 Finite Specification of Language 2.3 Regular Set and Expressions
Weeks 4-5 (4/4/2021 & 11/4/2021) Tutorial 3 - Tutorial 4 Online Quiz 1	3.0 Finite Automata 3.1 Deterministic Finite Automata (DFA) 3.2 State Diagram 3.3 Non Deterministic Finite Automata (NFA) 3.4 Finite Automata and Regular Set
Weeks 6-7 (18/4/2021 & 25/4/2021) Tutorial 5 - Tutorial 6 Online Quiz 2	4.0 Context Free Grammars 4.1 Grammars and Languages 4.2 Derivation Trees 4.3 Regular Grammars 4.4 Regular Grammars and Automata
Week 8 (2/5/2021) * TEST (7/5/2021) Online, Friday 9.30-11.30am, (2 hours)	5.0 Push Down Automata (PDA) PART 1 5.1 Push Down Automata 5.2 Context Free Language (CFL)
Week 9 (9/5/2021)	SEMESTER BREAK
Week 10-12 (16/5/2021 & 23/5/2021) Tutorial 7 - Tutorial 8	5.0 Push Down Automata (PDA) PART 2 5.1 Push Down Automata 5.2 Context Free Language (CFL)
Week 13-14 (30/5/2021 & 6/6/2021) Tutorial 9 - Tutorial 10, Quiz 3	6.0 Turing Machine 6.1 Standard Turing Machine 6.2 Turing Machine as Language Acceptor
Week 15-16 (13/6/2021 & 20/6/2021) Assignment, Quiz 4	7.0 Chomsky Hierarchy 7.1 Grammars 7.2 Language Levels 0, 1, 2, 3
Week 17 (27/6/2021 - 1/7/2021)	9.0 Study Week
Week 18-21 (4/7/2021– 24/7/2021)	EXAMINATION WEEKS

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

Thinking skills. Problem solving skills.

Student learning time (SLT) details:

Distribution of student Learning Time (SLT) Course content outline	Teaching and Learning Activities						TOTAL SLT
	Guided Learning Face to Face (F2F)				Guided Learning Non Face to Face (NF2F)	Independent Learning Non F2F	
CLO	L	T	P	O			
CLO 1 (5w) x 3 = 15					12h	25h	37h
CLO 2 (5w) = 15	8h	4h				14h	26h
CLO 3, 4 (3w) = 12	6h	6h				19h	31h
Grand Total SLT	14h	10h			12h	58h	94h

15x3 = 45hours – 2 test – 3 exam – 1 quiz –

Continuous Assessment		PLO	Percentage	Total SLT
1	Tutorial 1 – 5 (formative) CLO 1	1 & 5	10	10h
2	Tutorial 6 – 8 (formative) CLO 2	1 & 5	6	6h
3	Tutorial 9 – 10 (formative) CLO 3	1 & 5	4	4h
4	Quiz 1 (formative) CLO 1	1	2.5	15m
5	Quiz 2 (formative) CLO 2	1	2.5	15m
6	Quiz 3 (formative) CLO 2	1	2.5	15m
7	Quiz 4 (formative) CLO 3	1	2.5	15m
8	Test (formative) CLO 1 - CLO 2	1 & 5	25	2h
9	Assignment 1 – 2 (formative) CLO 3 - CLO 4	7	10	As in CLO4 (6h)
Final Assessment		PLO	PLO	Total SLT
10	Online Examination (summative assessment) CLO 2 - CLO 3	1 & 5	35	3h
Grand Total			100	120h

L: Lecture, T: Tutorial, P: Practical, O: Others

Special requirement to deliver the course (e.g: software, nursery, computer lab, simulation room):

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Learning resources:

Main references:

Zalmiyah Zakaria and Paridah Samsuri. Theory of Computer Science: Definitions, Examples and Active Learning Activities. 5th Edition, 2020.

Additional references:

1. Thomas Sudkamp, Language and machine, Pearson Int. Edition, Third Edition, 2006.
2. John C. Martin, Introduction to Languages and the Theory of Computation, Fourth Edition, 2011.
3. Michael Sipser, Introduction to the Theory of Computation, Cengage Learning, Third Edition, 2013.
4. Elaine Rich. Automata, Computability and Complexity. Pearson International Edition. Pearson Prentice Hall. 2009.

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

Any form of plagiarisms is NOT ALLOWED. Students who are caught cheating during exams may FAIL the course. Students who copied other student's assignment/exercise will get zero mark.

Other additional information (Course policy, any specific instruction etc.):

1. Attendance is compulsory and will be taken in every lecture session. Student with less than 80% of total attendance is not allowed to sit for final exam.
2. Students are required to behave and follow the University's dressing regulation and etiquette all the time.
3. Exercises and tutorial will be given in class and some may be taken for assessment. Students who do not do the exercise will lose the coursework marks for the exercise.
4. Assignments must be submitted on the due dates. Some points will be deducted for late submissions. Assignments submitted three days after the due date will not be accepted.
5. Make up exam will not be given, except to students who are sick and submit medical certificate which is confirmed by UTM panel doctors. Make up exam can only be given within one week of the initial date of exam.

Disclaimer:

All teaching and learning materials associated with this course are for personal use only. The materials are intended for educational purposes only. Reproduction of the materials in any form for any purposes other than what it is intended for is prohibited.

While every effort has been made to ensure the accuracy of the information supplied herein, Universiti Teknologi Malaysia cannot be held responsible for any errors or omissions.

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Name:	Name:
Signature:	Signature:
Date:	Date: