



## UNIVERSITI TEKNOLOGI MARA

### CSC569: PRINCIPLES OF COMPILERS

<b>Course Name (English)</b>	PRINCIPLES OF COMPILERS <b>APPROVED</b>
<b>Course Code</b>	CSC569
<b>MQF Credit</b>	3
<b>Course Description</b>	The construction of a compiler involves three important phases. The lexical analysis phase deals with the identifying of lexeme items, the syntax analysis phase determines the underlying structure of the source program and the code generation phase produces the machine code. The syllabus covers from the evolution of program languages to the basics of a compiler: lexical analysis, syntax analysis, scanner and parser.
<b>Transferable Skills</b>	Tech Savvy Expert in the Field
<b>Teaching Methodologies</b>	Lectures, Tutorial
<b>CLO</b>	CLO1 Describe the principle of a compiler that relate to programming languages evolution and implementation. CLO2 Employ formal method techniques in problem solving related to lexical and syntax analysis phases of compiler construction. CLO3 Display practical skills in constructing a simple parser using a parser generator tool for a subset of a language that represents the principles of compiler.
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. Evolution of the Major Programming Languages</b> 1.1) Pseudo codes 1.2) Imperative Programming 1.3) Functional Programming 1.4) Object-Oriented Programming 1.5) Scripting Languages	
<b>2. Introduction to Compiler</b> 2.1) Phases of a Compiler 2.2) Implementation Techniques	
<b>3. Lexical Analysis and Scanner Generator</b> 3.1) Finite Automata and Its Implementation 3.2) Regular Expressions 3.3) Lexical Analysis 3.4) Scanner Generator	
<b>4. Syntax and Semantic Analysis</b> 4.1) Context-Free Grammars 4.2) Writing Grammars 4.3) Syntax Analysis 4.4) Top Down Parser 4.5) Recursive descent parsers 4.6) Semantic Analysis	
<b>5. Bottom Up Parser and Parser Generator</b> 5.1) Bottom Up Parser 5.2) Parser generators	

Assessment Breakdown	%
Continuous Assessment	50.00%
Final Assessment	50.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Assignment 1	2%	CLO1
	Assignment	Assignment 2	3%	CLO1
	Assignment	Assignment 3	3%	CLO2
	Assignment	Assignment 4	7%	CLO2
	Group Project	Group Project (2-4 members/Group)	5%	CLO3
	Quiz	Quiz 1	2%	CLO1
	Quiz	Quiz 2	2%	CLO1
	Quiz	Quiz 3	3%	CLO2
	Quiz	Quiz 4	3%	CLO2
	Test	Test 1	5%	CLO1
	Test	Test 1	5%	CLO2
	Test	Test 2	10%	CLO2

Reading List	Recommended Text	<ul style="list-style-type: none"> <li>Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman 2014, <i>Compilers: Principles, Techniques, and Tools.</i>, 2 Ed., 11, Pearson England [ISBN: 9781292024349]</li> </ul>
	Reference Book Resources	<ul style="list-style-type: none"> <li>Sebastian Hack, Reinhard Wilhelm, Helmut Seidl 2016, <i>Compiler Design</i>, Springer [ISBN: 3642176372]</li> <li>Robert W. Sebesta 2015, <i>Concepts of Programming Languages</i>, 11 Ed., Addison-Wesley [ISBN: 9780133943023]</li> <li>Torben Aegidius Mogensen 2018, <i>Introduction to Compiler Design</i>, Springer International Publishing AG [ISBN: 3319669656]</li> <li>Bill Campbell, Swami Iyer, Bahar Akbal-Delibas 2012, <i>Introduction to Compiler Construction in a Java World</i>, CRC Press [ISBN: 9781439860885]</li> <li>Bergmann, Seth D 2010, <i>Compiler Design: Theory, Tools, and Examples (Java/C++ Edition)</i>, Rowan University</li> <li>Terence Halsey 2018, <i>Compiler Design: Principles, Techniques and Tools</i>, Larsen and Keller Education [ISBN: 978-163549677]</li> </ul>
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	