



## UNIVERSITI TEKNOLOGI MARA

### DSC551: PROGRAMMING FOR DATA SCIENCE

<b>Course Name (English)</b>	PROGRAMMING FOR DATA SCIENCE <b>APPROVED</b>
<b>Course Code</b>	DSC551
<b>MQF Credit</b>	3
<b>Course Description</b>	no description provided
<b>Transferable Skills</b>	programming for data science
<b>Teaching Methodologies</b>	Lectures, Lab Work, Discussion
<b>CLO</b>	CLO1 Apply Python and R programming to analyze both numerical and text-based data. CLO2 Construct simple computer scripts using structured approach. CLO3 Demonstrate data analysis in R . CLO4 Describe data analysis in Python.
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. 1. Introduction</b> 1.1) 1.1 Overview of Python Programming 1.2) 1.2 Preparation for programming 1.3) 1.3 Python as Interactive interpreter 1.4) 1.4 Basic types	
<b>2. 2. Component of Python Programming Language</b> 2.1) 2.1 Boolean values and comparison operators 2.2) 2.2 Variable assignment 2.3) 2.3 String 2.4) 2.4 Special characters in strings 2.5) 2.5 Lists	
<b>3. 3. Control Structure</b> 3.1) 3.1 If statements 3.2) 3.2 For loops 3.3) 3.3 While loops	
<b>4. 4. Functions and scripts</b> 4.1) 4.1 Introduction to functions 4.2) 4.2 Function as namespace 4.3) 4.3 Functions as object 4.4) 4.4 Writing scripts 4.5) 4.5 Modules 4.6) 4.6 Reading and writing data	
<b>5. 5. R Programming</b> 5.1) 5.1 Intro to R 5.2) 5.2 Getting data into R 5.3) 5.3 Basic data management 5.4) 5.4 Data structures and manipulation 5.5) 5.5 Loop functions (lapply,sapply,tapply,apply) 5.6) 5.6 Vector and matrix operations	

**6. 6. Data Analysis with R**

6.1) 6.1 Descriptive analysis and base graphics

6.2) 6.2 Basic Inferential analysis

6.3) 6.3 Basic data simulation

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Test	Written Test 2	15%	CLO2
	Test	Lab Test 1	15%	CLO2
	Test	Lab Test 2	15%	CLO3
	Test	Written Test 1	15%	CLO1

Reading List	Recommended Text
	<ul style="list-style-type: none"> <li>• Lee, Kent D. 2011, <i>Python: programming fundamentals</i>. [ISBN: 9781849965361]</li> <li>• Peng, R.D. 2014, <i>R Programming For data Science</i></li> </ul>

Article/Paper List	Reference Article/Paper Resources
	<ul style="list-style-type: none"> <li>• Wes McKinney 2012, Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython</li> <li>• Eric Matthes 2015, Python Crash Course: A Hands-on, Project-based Introduction to Programming</li> <li>• Bradley N. Miller and David L. Ranum 2015, Problem Solving with Algorithms and Data Structures Using Python</li> <li>• Kohl, Matthias 2015, Introduction to Statistical Analysis with R. First Edition</li> <li>• 5. Owen Jones, Robert Maillardet, and Andrew Robinson 2009, Introduction to Scientific Programming and Simulation Using R</li> <li>• Rizzao, M. L 2008, Statistical Computing with R</li> </ul>

Other References
This Course does not have any other resources