	Ministry of Higher Education and Scientific Research - Iraq Al-Nahrain University College of Science Computer Science Department	

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Data Structure			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**COMP2108**				
ECTS Credits	6.0				
SWL (hr/sem)	150				
Module Level	2		**Semester of Delivery**	1	
Administering Department	Computer science		**College**	Science	
Module Leader	Nadia Fadhil AL-Bakri		**e-mail**	Nadia.f.al-bakri@nahrainuniv.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	Ph. D.	
Module Tutor	Nadia Fadhil AL-Bakri		**e-mail**	Nadia.f.al-bakri@nahrainuniv.edu.iq	
Peer Reviewer Name	Ban N. Dhannoon		**e-mail**	ban.n.dhannoon@nahrainuniv.edu.iq	
Scientific Committee Approval Date	1/ 9/ 2025		**Version Number**	1.0	
Laboratory Techers	م.م زينب حيدر م.م أبتهال عباس				

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Programming Language	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	• **Preparing graduates with the experience in the basis of data structures and types.** • **Preparing graduates the optimal methods of storing data in the computer and transferring them.** • **Provides students high programming skills.** • **Enable students to draw flowchart for the problems on paper and screen.** • **Preparing the ability to understand the problems to be solved and to find the desired goal represented by the solution to these problems through data collection and analysis.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• **Understand Key Data Structures: Define, explain, and apply fundamental data structures such as arrays, linked lists, stacks, queues, trees.** • **Implement Data Structures: Write efficient code to implement and manipulate data structures using programming languages like Java.** • **Select Appropriate Data Structures: Choose the most appropriate data structures to solve specific problems based on performance needs.**
Indicative Contents المحتويات الإرشادية	• **High Knowledge about data manipulations skills.** • **High programming following and tracing.** • **The ability of implementing different data structures based on java.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• **Problem solving Learning.** • **Deliver detailed explanations of key data structures.** • **Collaborative Learning.** • **Implementation of data structures showing step-by-step how to build and manipulate them in code.** • **Providing the HW solution for all.**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	1	10% (10)	10	All
	Assignments	1	10% (10)	12	All
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2 hr	10% (10)		All
	Final Exam	3 hr	50% (50)		All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	• Data structure definitions • Linear and nonlinear data structure. • Primitive data types • Expressions • Type conversion
Week 2	• String manipulation • Flowchart constructions
Week 3	Recursion Functions
Week 4	Dynamic programming
Week 5	ADT (Bag, Queue, Stack)
Week 6	Circular Queue
Week 7	Stack applications
Week 8	First mid exam
Week 9	converting infix form to postfix form Algorithm
Week 10	• Linear List and Linked Allocation • Operations for S.L.L.L
Week 11	Double-Ended Lists
Week 12	Double linked linear list (D.L.L.L.)
Week 13	D.L.L.L Operations
Week 14	Second mid exam
Week 15	D.L.L.L. as a queue

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Assignments of Primitive data types and simple programs. Assignments of Expressions Type conversion.
Week 2	Strings Assignments.
Week 3	Recursion Functions Assignments.
Week 4	Dynamic programming Assignments.
Week 5	ADT (Bag) Assignments.
Week 6	ADT (Queue) Assignments.
Week 7	ADT (Stack) Assignments.
Week 8	Circular Queue Assignments.
Week 9	First mid exam
Week 10	Linear List and Linked Allocation Assignments Operations for S.L.L.L Assignments
Week 11	Double-Ended Lists Assignments
Week 12	Double linked linear list (D.L.L.L.) Assignments
Week 13	D.L.L.L Operations Assignments
Week 14	D.L.L.L. as a queue Assignments
Week 15	Second mid exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Providing high-quality printed paper lectures that cover the entire subject with exercises	available
Recommended Texts	**Textbook:** 1-**Data Structures and Algorithms in Java™** Sixth Edition 2014 Michael T. Goodrich Roberto Tamassia Michael H. Goldwasser 2-**Data Structures And Algorithms Made Easy In JAVA 2017**	

	Narasimha Karumanchi	
Websites	1-**Data Structures and Abstractions with Java** Fifth Edition 2019 Frank M. Carrano,Timothy M. Henry 2-**Cracking *The* Coding Interview** 6th edition 2015 Gayle Laakmann Mcdowell	

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.