	Ministry of Higher Education and Scientific Research - Iraq University of Technology Department of Computer Science Information System Branch	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	SORTING AND SEARCHING ALGORITHMS	**Module Delivery**	
Module Type	BASIC LEARNING ACTIVITIES		**-Theory Lecture** **-Lab** **-PracticalSeminar**
Module Code	SOSA223		
ECTS Credits	5:00		
SWL (hr/sem)	125		

Module Level	2	**Semester of Delivery**	4
Administering Department	Computer science	**College**	Computer science
Module Leader	Dr. Nada Hussain Ali	**e-mail**	nada.h.ali@uotechnology.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	PhD in computer science
Module Tutor	None	**e-mail**	None
Peer Reviewer Name		**e-mail**	
Review Committee Approval		**Version Number**	

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Data Structures	**Semester**	3
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Explain the topic of algorithms 2. Explanation of topics: recursion, graphs, trees and their types, binary trees, binary search tree creation and addition and deletion operations, search algorithms and their types, sorting algorithms and their types 3. Write programs recursion, graphs, trees, binary trees, binary search tree creation and addition and deletion operations, search algorithms and their types, sorting algorithms and their types 4. A statement on how to deal with each type of algorithm used in searching for data and the algorithms used in sorting data
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. an ability to identify, formulate, and solve complex programming problems by applying principles of science, and mathematics 2. an ability to apply programming design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors 3. an ability to communicate effectively with a range of audiences 4. an ability to recognize ethical and professional responsibilities in programming situations and make informed judgments, which must consider the impact of programming solutions in global, economic, environmental, and societal contexts 5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives 6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use programming judgment to draw conclusions 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
Indicative Contents المحتويات الإرشادية	1. Explain to the student how recursion works in different types of function 2. Teaching the student what is tree and graph structure 3. Explain to student how to great a binary tree and different functions on binary tree 4. Explain what is binary search tree and how to delete and insert nodes in a binary tree 5. Explain different algorithms for search and sorting algorithms performed on arrays
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lectures (Theoretical and Practical) Examples, Homework and Programs Exams and using modern data show devices to display lectures subjects. References as books, internet subjects.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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**	1	10% (10)	5	LO # 1 and 3
	Practical Seminar(Lab).	2	15% (15)	Continuous	LO # 2 , 4 and 5
Summative assessment	**Midterm Exam**	1 hr	15% (15)	14	LO # 1 to 5
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Recursion
Week 2	Questions & examples about Recursion
Week 3	Graph , trees types of trees
Week 4	Questions & examples about Graph , trees types of trees
Week 5	Binary Tree
Week 6	Binary Tree scan
Week 7	Binary Tree Representations
Week 8	Binary search tree
Week 9	Create , insert & delete operations of binary tree
Week 10	Questions & examples about Create , insert & delete operations of binary tree
Week 11	Sorting Algorithms Selection sort algorithm

Week 12	Exam
Week 13	Insertion sort algorithm
Week 14	Searching Algorithms- Sequential search
Week 15	Binary search
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) **المنهاج الاسبوعي للمختبر**	
Week	
Week 1	Recursion ,Questions & examples about Recursion
Week 2	Graph , trees types of trees
Week 3	Questions & examples about Graph , trees types of trees
Week 4	Binary Tree
Week 5	Binary Tree scan
Week 6	Binary Tree Representations
Week 7	Binary search tree
Week 8	Create , insert & delete operations of binary tree
Week 9	Questions & examples about Create , insert & delete operations of binary tree
Week 10	Sorting Algorithms Selection sort algorithm
Week 11	Exam
Week 12	Insertion sort algorithm
Week 13	Searching Algorithms- Sequential search, Binary search

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Author: MICHAEL McMillan. Title :" Data Structures and Algorithms Using C#" , 2007	
Recommended Texts	Author : Thomas H. Cormen , CHARLES E. LEISERSON Title :"Introduction to Algorithms ", third edition ,2009	
Websites	https://cs.uotechnology.edu.iq/images/mypdf/subjects/2is/2ndsort2024C2.pdf	

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB 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.