نموذج وصف المقرر

وصف المقر ر

يوفر وصف المقرر هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	Shatt AL-Arab University
2. القسم العلمي / المركز	Computer Science – College of Science
3. اسم / رمز المقرر	CS202- Data Structures and Algorithms 1
4. أشكال الحضور المتاحة	In person and Supported online meetings
5. الفصل / السنة	2025-2024 \ First semester
6. عدد الساعات الدراسية (الكلي)	6 per week
7. تاريخ إعداد هذا الوصف	2025-8-1

8. أهداف المقرر

1. Understand the importance and types of data structures.
2. Learn about array representation and operations.
3. Gain knowledge of string manipulation and algorithms.
4. Understand the concept and implementation of linked lists.
5. Learn about stack operations and practical uses.
6. Comprehend the concept and applications of recursion.
7. Understand queue operations and their applications

9.مخرجات المقرر وطرائق التعليم والتعلم والتقييم

أ-الاهداف المعرفية

1. Recognize and explain the importance of data structures in programming.
2. Demonstrate proficiency in array manipulation and accessing elements.
3. Apply string manipulation techniques and algorithms to solve problems.
4. Implement and utilize linked lists for efficient data management.
5. Apply stack operations and utilize stacks in various problem-solving scenarios.
6. Implement recursive functions and apply recursion to solve problems effectively.

ب-الاهداف المهاراتية الخاصة بالمقرر

-1
-2
-3
-4

طرائق التعليم والتعلم

1. Lectures and interactive discussions
2. Practical laboratory sessions
3. Problem-solving exercises and tutorials
4. Simulation tools and software
5. Assessments (exams, projects) with feedback

طرائق التقييم

Quizzes
Assignments
.Projects / Lab
Exam
Final Lab
Final Exam

ج- الاهداف الوجدانية والقيمية

-1
-2
-3
-4

طرائق التعليم والتعلم

طرائق التقييم

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي) .

1. **Problem-Solving Skills:**
   - Develop logical and analytical thinking.
   - Analyze complex problems and design efficient solutions using appropriate data structures.
2. **Teamwork and Collaboration:**
   - Work effectively in group projects to design and implement algorithms.
   - Collaborate with peers to solve programming challenges in a structured way.
3. **Effective Communication:**
   - Communicate technical ideas clearly using appropriate terminology, diagrams, and documentation.
   - Write reports that explain algorithm design, implementation, and testing.
4. **Time Management:**
   - Meet deadlines for assignments and projects.
   - Balance theoretical study with practical coding efficiently.
5. **Self-Learning and Continuous Development:**
   - Explore concepts beyond the textbook through online resources and research.
   - Engage in independent study to understand advanced topics and enhance learning.
6. **Use of Modern Tools and Technologies:**
   - Utilize integrated development environments (IDEs) and debugging tools.
   - Apply software tools for data visualization and performance analysis.
7. **Employability Readiness:**
   - Acquire programming and algorithmic skills relevant to industry needs.
   - Understand how data structures are applied to solve real-world problems in software development.

10.بنية المقرر

الاسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة/او الموضوع	طريقة التعلم	
1	6		Introduction - **Types of Data types, type of data structures**	Theory+ LAB	
2	6		Arrays DS: definition, features, logic, physical structure, access equations of one dimensional array.	Theory+ LAB	
3	6		Arrays DS: logic, physical structure, access equations of two dimensional arrays.	Theory+ LAB	
4	6		Arrays DS: logic, physical structure, access equation of three and multi-dimensional	Theory+ LAB	

		arrays and triangle arrays.			
	Theory+ LAB	Strings DS: definition, basic representations in memory, create String object		6	5
	Theory+ LAB	Linked Lists DS: definition, advantage and disadvantage of arrays and linked lists, basic operations of linked lists, types of linked lists.		6	6
	Theory+ LAB	**Exam**		6	7
	Theory+ LAB	Implementation of linked lists		6	8
	Theory+ LAB	Stack DS: definition, features, implementation using linked lists and Arrays		6	9
	Theory+ LAB	Stack DS: Application-recursion		6	10

	Theory+ LAB	Stack DS: Application- Expression Conversion		6	11
	Theory+ LAB	Stack DS: Application- evaluating expressions		6	12
	Theory+ LAB	Queue DS: definition, features, implementation using linked lists		6	13
	Theory+ LAB	Queue DS: definition, features, implementation using Arrays		6	14
	Theory+ LAB	Queue DS: types of queues		6	15
	Theory+ LAB	**Preparatory week before the final Exam**		6	16

11.البنية التحتية	
1-الكتب المقررة المطلوبة	Data Structures and Algorithms in Java. Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser. 6th Edition. 2014 John Wiley & Sons, Inc.
2-المراجع الرئيسية(المصادر)	Data Structures and Abstractions with Java™. Frank M.

	Carrano and Timothy M. Henry. Fifth Edition 2019 Pearson Education, Inc.
أ)الكتب والمراجع التي يوصى بها(المجلات العلمية,التقارير,.....)	Data Structures and Abstractions with Java™. Frank M. Carrano and Timothy M. Henry. Fifth Edition 2019 Pearson Education, Inc.
ب)المراجع الاكترونية,مواقع الانترنيت,.....	https://www.javatpoint.com/data-structure-tutorial

12.خطة تطوير المقرر الدراسي

مدرس المادة

رئيس القسم

عميد الكلية