TEMPLATE FOR COURSE SPECIFICATION

> HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

> This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Al-Nahrain University/ College of Science
2. University Department/Centre	Computer Science department
3. Course title/code	Data Structure
4. Modes of Attendance offered	Full Time
5. Semester/Year	first Semester/ Second Year
6. Number of hours tuition (total)	30 Theory + 30 Practical
7. Date of production/revision of this specification	2022-2023
8. Aims of the Course	

- Preparing graduates who have experience in the basis of data structures, types, and optimal methods of storing them in the computer and transferring them.
- Implementation of multiple algorithms, the purpose of which is to see these algorithms and show the best ones in terms of speed of implementation.
- A student is also prepared with 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.
- Preparing graduates with experience in the basis of data, its types, and the optimal methods of storing it in the computer and transferring it.
- Preparing graduates who have experience in the basis of data structures, types, and optimal methods of storing them in the computer and transferring them.

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals .

A1. Basic knowledge about data and information, and how to manage them.

A2. Focus on learning java program from data structure's fundamentals and methods.

A3. Comparing between known methods from time and space point of view.

B. The skills goals special to the course.

B1. The ability to use Java language, and applying the theory fundamentals and its use in different algorithms.

B2. Improve the student's analysis and conclusion capabilities.

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Teaching and Learning Methods

Books and theoretical lectures in addition to laboratory work, discussion and asking questions that help the student to analyze and conclude.

Assessment methods

- Monthly exams + daily surprise exams + homework.
- Classroom posts and discussions.
- Daily assessment of practical performance in the laboratory.
- Determining a grade for daily attendance.
- Determine the degree of adherence to the dress.

C. Affective and value goals

C1-Question: Looking for new information and raising questions.

C2 - Conclusion and Deduction: Thinking about what is beyond the available information to fill the gaps in it.

C 3 - Comparison: Note the aspects of ratios and differences between things.

C4 - Classification: Putting things into groups according to common characteristics.

D. General and rehabilitative transferred skills(other skills relevant to employability and personal development)

D1. Be able to program a real problem using a computer.

D2 - Conducting experiments to develop an existing system and building a model for any system by collecting and analyzing information.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2 theory + 2 Lib		Data structure definitions Primitive data types Expressions Type conversion	Formal Lectures	Class Activity
2	=		String Flowchart	Formal Lectures	Class Activity and Quiz
3			Recursion Function	Formal Lectures	Class Activity and Quiz
4	=		ADT (Bag, Queue, Stack)	Formal Lectures	Class Activity and Quiz
5	=		Circular Queue	Formal Lectures	
6	=		Stack applications	Formal Lectures	Class Activity and Quiz
7	mid exam 1				
8	=		Algorithm for converting infix form to postfix form	Formal Lectures	Class Activity
9,10	=		Linear List and Linked Allocation S.L.L.L operations	Formal Lectures	Class Activity
11	=		Double-Ended Lists	Formal Lectures	Class Activity
12	mid exam 2				
13	=		Double linked linear list (D.L.L.L.)	Formal Lectures	Class Activity
14,15	=		D.L.L.L Operations D.L.L.L. as a queue	Formal Lectures	Class Activity and Quiz

11. Infrastructure

1. Books Required reading:	Data Structures and Algorithms in Java™ Sixth Edition Michael T. Goodrich,Roberto Tamassia Michael H. Goldwasser 2014 Data Structures And Algorithms Made Easy In JAVA 2017 Narasimha Karumanchi
2. Main references (sources)	Data Structures and Algorithms in Java™ Sixth Edition Michael T. Goodrich Roberto Tamassia Michael H. Goldwasser 2014
A- Recommended books and references (scientific journals, reports…).	Dictionary of Algorithms and Data Structures
B-Electronic references, Internet sites…	Data Structures and Abstractions with Java 2019 CRACKING *THE* CODING INTERVIEW 6TH EDITION GAYLE LAAKMANN MCDOWELL 2015

12. The development of the curriculum plan
• Suggest new data structures to improve software performance • Expansion of the concepts covered in the lectures