

## Course Description Form

1. Course Name:	
Data Compression	
2. Course Code:	
CSMM4118	
3. Semester / Year:	
First Semester 2024-2025	
4. Description Preparation Date: 5/10/2024	
5/2/2024	
5. Available Attendance Forms: In classroom	
weekly Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 H/60 Units	
7. Course administrator's name (mention all, if more than one name)	
Name: Lecturer Assistant Zainab Ali Yakoob Email: Zainab.a.yakoob@uotechnology.edu.iq	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"><li>• Introducing the student to the subject of data compression and the methods to compress data.</li><li>• Problems that appear in the solutions, the techniques used to address them, and the understanding of issues related to distinguishing them and ways to describe it.</li></ul>

## 9. Teaching and Learning Strategies

<b>Strategy</b>	<p><b>A- Knowledge and Understanding</b></p> <p>A1: Enable the student to know and understand the theoretical principles of windows programming and turn them into programming functions for implementation.</p> <p>A2: The student describes how to build all programming interfaces in windows systems using the functions designated for that.</p> <p>A3: Enable the student to know and understand the practical applications.</p> <p>A4: To Impart the skills needed to develop windows applications, student will learn how to design windows and various components of windows, keyboard events, graphics and text, file handling.</p> <p><b>B- Subject-specific skills</b></p> <p>B1: Logical thinking</p> <p>B2: Giving the students tasks to design different models by using advanced programming languages to motivate the students to acquire skills.</p> <p><b>C- Thinking Skills</b></p> <p>C1: Ability to work in teams</p> <p>C2: Ability to solve problems and think collectively</p> <p><b>D- General and Transferable Skills (other skills relevant to employability and personal development)</b></p> <p>D1: Using theoretical and practical tools in the design and implementation of interfaces to create interaction between the user and the computer.</p> <p>D2: Using modern tools of communication to interact with the work team to solve a specific problem</p> <p>D3: The ability to manage time while working as a team.</p>
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## 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical 2 laboratories	A-B-C-D	Introduction to data compression	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
2	2 theoretical 2 laboratories	A-B-C-D	Type of data compression Compression Performance	lectures +	Attendance + answer

				Video lectures + Application in the laboratory	discussion questions
3	2 theoretical 2 laboratories	A-B-C-D	Basic Techniques	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
4	2 theoretical 2 laboratories	A-B-C-D	Run Length Encoding	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
5	2 theoretical 2 laboratories	A-B-C-D	Run Length Text Compression Run Length Image Compression	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions

6	2 theoretical 2 laboratories	A-B-C-D	Statistical Methods	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
7	2 theoretical 2 laboratories	A-B-C-D	Source Coding Technique Shannon – Fano Method Huffman Method Extension of Code	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
8	2 theoretical 2 laboratories	A-B-C-D	Prefix Code	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
9	2 theoretical 2 laboratories	A-B-C-D	General Prefix Code The Golomb Code	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions

<b>10</b>	2 theoretical 2 laboratories	A-B-C-D	Other Prefix Code Variant of Huffman , MNP5	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
<b>11</b>	2 theoretical 2 laboratories	A-B-C-D	Dictionary methods	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
<b>12</b>	2 theoretical 2 laboratories	A-B-C-D	Static Dictionary methods Dynamic Dictionary methods	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
<b>13</b>	2 theoretical 2 laboratories	A-B-C-D	LZ77 Sliding window LZ78 Dictionary methods LZW Dictionary methods	lectures + Video lectures +	Attendance + answer discussion questions

				Application in the laboratory	
14	2 theoretical 2 laboratories	A-B-C-D	Arithmetic Coding	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions
15	2 theoretical 2 laboratories	A-B-C-D	First semester exam	lectures + Video lectures + Application in the laboratory	Attendance + answer discussion questions

## 11. Course Evaluation

Attendance - oral exams and tests - mid-course exam - end-of-course exam

## 12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Not required
Main references (sources)	Handbook of Data Compression Fifth Edition, Springer-Verlag London Limited 2010.
Recommended books and references (scientific journals, reports...)	Digital Image Processing, Rafael C. Gonzales and Richard E. Woods, Third Edition, Pearson 2008.
Electronic References, Websites	