Republic of Iraq
Ministry of Higher Education
& Scientific Research

University of Information
Technology & Communications
College of biomedical Informatics
Medical Intelligent systems department

Course Syllabus/Specification

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 program me specification.

1. Teaching Institution	**University of Al-Mustaqbal** **college of Science**
2. Department / Center	**Intelligent Medical Systems Department**
3. Course Title /Code	Information security in healthcare **MU03024203**
4. Modes of Attendance Offered	Presence
5. Semester/Year	2025_2026
6. Number of Hours Tuition (Total)	60
7. Date of Production of this Specification	15/9/2024
8. Course Description	Defines the basics of data security, explains the traditional methods of cryptography, stream and block cipher, cryptanalyst and attackers.
9. Aims of the Course Introduction and terminology, Preliminary cryptographic techniques, Public Key cryptosystems, Authentication	

A. Knowledge and Understanding

1- basics of data security
2- types of traditional methods
3- basics of cryptanalysis

Teaching and Learning Methods (Select from No. 17)
a. daily quizzes b. class activities c. suggestion of some websites and applications to be viewed by students
Assessment Methods (Select from No. 18)
a. class interfering b. activity evaluation c. monthly tests d. projects and seminars
B. Subject-Specific Skills. -B1 summer practice -B2 graduation projects -B3 scientific research
Teaching and Learning Methods (Select from No. 17)
a. administrating the class theoretically and practically to avoid student boring and miss understanding b. group homework and activities c. give a specific degree for these activities
C. Critical Thinking Skills -C1. Improving student's skills through some work to be submitted within a specific time -C2 improving the conversation and arguing skills -C3 analyzing the problems through scientific methodology
Teaching and Learning Methods (Select from No. 17)
a. quizzes without previous announcement b. restricting the submission time
Assessment Methods (Select from No. 18)
a. involving and participation in class b. commitment with submission time

D. General and Transferable Skills. (Select from No. 16)

-D1 improving the student abilities of using technical assessments.
-D2 improving the student's ability of using internet
-D3 improving the student's ability of using multimedia with security

11. Course Structures					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2T + 2P	Recognize the basic idea of security.	Introduction to computer security	Practical and theoretical	Daily quiz and HW
2	2T + 2P	Understand the concepts of cyber security.	Kinds of breaches and attacks	Practical and theoretical	Daily quiz and HW
3	2T + 2P	Learning the concept of attack and threats.	Methods of defense, Cryptographic techniques	Practical and theoretical	Daily quiz and HW
4	2T + 2P	List the various types of traditional cryptosystems to secure data transmission.	Traditional methods Ceaser cipher, Multiplicative cipher	Practical and theoretical	Daily quiz and HW
5	2T + 2P	Learn some basic methods of Monophonic encryption that using one element key.	Traditional methods Keyword mixed cipher	Practical and theoretical	Daily quiz and HW
6	2T + 2P	Learn some basic methods of encryption that using more than one key.	Homophonic substitution cipher Vegene'r cipher, Bearfut cipher,	Practical and theoretical	Daily quiz and HW
7	2T + 2P	Learn some basic methods of Homophonic encryption.	Columnar cipher, Play fair cipher, Hill cipher	Practical and theoretical	Daily quiz and HW
8	2T + 2P	Learn the pros and cons of using one time pad key OTP.	One time pad	Practical and theoretical	Daily quiz and HW
9	2T + 2P	Define Feistel method and DES method.	DES	Practical and theoretical	Daily quiz and HW
10	2T + 2P	Identify the basic tables and key generation of DES.	DES	Practical and theoretical	Daily quiz and HW
11	2T + 2P	Define DEA method and compared with DES method.	Create 16 sub keys Encode each 64 bit block of data	Practical and theoretical	Daily quiz and HW
12	2T + 2P	Discuss the concept of cryptanalyst, cyberattack and defense.	The decryption process, Weakness of DES	Practical and theoretical	Daily quiz and HW
13	2T + 2P	Explain the basic steps of public key	Knapsack algorithm, RSA, Diff Halman	Practical	Daily

		encryption		and theoretical	quiz and HW
14	2T + 2P	Recognize the basic idea of authentication	Authentication	Practical and theoretical	Daily quiz and HW
15	2T + 2P	Explain the basic steps of cryptanalysis. The difference between attacker and cryptanalyst	Cryptanalyst	Practical and theoretical	Daily quiz and HW

12. Infrastructure :

I. Textbooks:.	1- Cryptography and Network Security: Principles and Practice, William Stallings, Publisher: Pearson , Edition 5, 2010. 2- Cybersecurity Essentials, Charles J. Brooks, Christopher Grow , Philip A. Craig Jr. , Donald Short, publisher: Sybex, Edition 1, 2017
II. References:	Cryptography & Network Security, 1st Edition,by Behrouz A. Forouzan, Publisher: McGraw-Hill Education, 2007.
III. Recommended reading: (Periodicals, Reports, …)	COMPUTER SECURITY AND CRYPTOGRAPHY ALAN G. KONHEIM
IV. E-References, Websites, ….	Recommended : 1- https://insider.ssi-net.com/insights/what-is-the-difference-between-data-security-and-cyber-security. 2- https://www.secureworld.io/industry-news/cybersecurity-vs-data-security-definition 3- https://www.777networks.co.uk/data-security-vs-cyber-security-whats-the-difference/

13. Assessments:		Type of Assessment Description											
	Weighting	Theory						Practical					
Course Work	Total	T.1	T.2		Assig.		Atten	T.1	T.2	Proj			Atten
	50	10	10		5		5	5	5	6			4

Final	Total	Theory	Practical	
	50	40	10	
Total	100			

14. Course Development Plan
Improving and adding new methods of cryptosystems and steganography with rate not more than 10% every year.

15. ABET/CAC

	Student Outcome	Course Objectives									
a	An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline	I	II	III	IV	V					
b	An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution					V					
c	An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs					V					
d	An ability to function effectively on teams to accomplish a common goal					V					
e	An understanding of professional, ethical, legal, security and social issues and responsibilities					V					
f	An ability to communicate effectively with a range of audiences					V					
g	An ability to analyze the local and global impact of computing on individuals, organizations, and society					V					
h	Recognition of the need for and an ability to engage in continuing professional development					V					
i	An ability to use current techniques, skills, and tools necessary for computing practice					V					
Computer Science (CS) For CS Add (j &k) to (a – i)											
	Computer Science (CS)										

j	An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices				IV						
k	An ability to apply design and development principles in the construction of software systems of varying complexity				IV						
Information systems (IS) For IS Add (j) to (a – i)											
	Information systems (IS)										
j	An understanding of processes that support the delivery and management of information systems within a specific application environment				IV						
Information Technology (IT) For IT Add (j,k,l,m,n) to (a –i)											
	Information Technology (IT)										
j	An ability to use and apply current technical concepts and practices in the core information technologies			III							
k	An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems			III							
l	An ability to effectively integrate IT-based solutions into the user environment			III							
m	An understanding of best practices and standards and their application			III							
n	An ability to assist in the creation of an effective project plan			III							
(IB) Information Business Add fields according to IB											
	Information Business (IB)										
o	An ability to apply total quality management for it system and to develop the software.		II								
p	An ability to analyze quantitative models for business in a long term plan (strategy) in dynamic business.		II								
q	An ability to apply E-process for organization.		II								

16. General and Transferable Skills
a. Ability to adopt lifelong learning.
b. Ability to communicate information with other specialization.
c. Ability to solve problems.
d. Ability to communicate effectively with colleagues in work environment.

17. Teaching and Learning Methods
a. E-Learning
b. Self-Learning
c. Learning by Experimentation
d. Cooperative Learning
e. Brainstorming
f. Indirect Learning

18. Assessment Methods
a. Achievement Tests
b. Standard Tests
c. Individual Skills Assessment
d. Selection of Intellectual Question in Achievement tests
e. Collage Peer Assessment
f. Collective Project
g. Project consist of Random groups of Students
h. Students Performance Assessment
i. Experience and Professionalism Assessment