وزارة التعليم العالي والبحث العلمي

جـهاز الإشـراف والتقـويم العلـمي

دائرة ضمان الجودة والاعتماد الأكاديمي

قسم الاعتماد الدولي
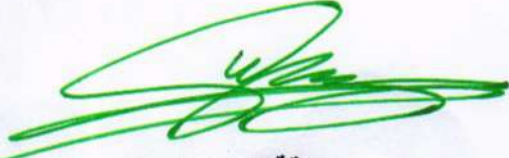
استمارة وصف البرنامج الأكاديمي للكليات و المعاهد

اسم الجامعة : **جامعة بابل**

اسم الكلية: كلية تكنولوجيا المعلومات

القسم العلمي : امنية المعلومات

تاريخ ملء الملف : 2023-11-25

التوقيع :

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التاريخ : ٢٠٢/١٢/٢٨

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التاريخ : ٢٠٢/١٢/٢٨

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي : اخلاص طعمه جابر

التاريخ   /   /

التوقيع

مصادقة السيد العميد

١٢/٢٨

University of Babylon

جامعة بابل

First Cycle – Bachelor's degree (B.Sc.) – Information Security

بكالوريوس في تكنولوجيا المعلومات - امنية المعلومات

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1.　Mission & Vision Statement

Vision Statement

The academic staff of the Information Security department at the University of Babylon is dedicated to empowering students with a comprehensive understanding of information security through a holistic approach encompassing coursework, practical training, research, and real-world applications. We believe that students will truly grasp the discipline of information security by engaging in hands-on experiences, exploring cutting-edge technologies, and developing critical thinking skills. Our instructional methods foster a collaborative learning environment, where small class sizes facilitate personalized attention and foster strong relationships between faculty and students. We are committed to creating an inclusive, supportive, and intellectually stimulating atmosphere, nurturing the next generation of professionals in the field of information security.

Mission Statement

The Information Security department at the University of Babylon is dedicated to providing students with a comprehensive education in the field of information security. Our mission is to equip students with a solid foundation of knowledge in information security principles, practices, and technologies while enabling them to specialize in their chosen focus areas within the domain. The curriculum and guidance are designed to prepare graduates for successful careers in various sectors of the information security industry, including but not limited to cybersecurity, network defense, digital forensics, and risk management. We also strive to foster critical thinking, ethical decision-making, and a strong sense of professionalism in our students. Furthermore, the Information Security program collaborates

with other disciplines to support their educational objectives, ensuring that students across the university gain essential knowledge and skills in information security. Through engaging coursework, practical experiences, and mentorship, we aim to produce competent and innovative professionals who can effectively address the evolving challenges of securing digital systems and safeguarding sensitive information.

2.   **Program Specification**

Programme code:	BSc-IS	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

Information security is an incredibly dynamic and crucial field, well-positioned to meet the demands of the digital age. The focus of our program encompasses the entire spectrum of information protection, encompassing aspects such as data confidentiality, integrity, availability, and resilience. Our degree program offers a comprehensive understanding of information security from its fundamental principles to advanced techniques and emerging trends. The program is designed to cater to a diverse range of students' interests and aspirations. Some students are drawn to the breadth of the subject, which explores various facets of securing information across different domains, while others see it as a pathway to specialized expertise. At the end of the first year, all students have the opportunity to transition into our specialized degrees, such as Cybersecurity, Network Defense, Digital Forensics, or Risk Management. This flexibility allows students to tailor their academic journey to their specific areas of interest and career goals.

At Level 1, students are introduced to the fundamentals of Information Security, providing a solid foundation for progression into specialized programs within the Information Security department. At Level 2, core topics specific to the field are covered, preparing students for advanced research-led modules at Levels 3 and 4. Our graduates are trained to appreciate the symbiotic relationship between research and teaching, aligning with the mission statements of the university and the department.

Starting from Level 2 through Levels 3 and 4, students have the freedom to choose over half of their module credits, with the requirement to select a diverse range of modules that reflect the complexity of information security. This ensures a breadth of knowledge expected from a graduate with an information security degree, covering areas such as cybersecurity, cryptography, risk management, and ethical hacking. Personal tutors provide guidance in making module choices, allowing students to develop their own specialized interests within the realm of information security.

We foster a research-oriented ethos from the beginning, integrating practical components into lecture modules or dedicated practical modules, conducting research seminars, and providing

tutorials. Level 1 includes a mandatory field course, which students must pass to progress into Level 2, and optional field courses are offered at Levels 2, 3, and 4. At Level 4, all students undertake an independent research project, which may involve library or data analysis work, as well as field or laboratory-based projects, earning varying credit allocations.

To ensure continuity and progressive guidance, academic tutorials are conducted at Levels 1 and 2 with the same tutor, who also serves as the personal tutor. These tutorials incorporate workshops to develop essential skills like information retrieval and presentation techniques, followed by assessed exercises such as essays and presentations, allowing students to practice these skills in the context of information security.

Additionally, we offer international study opportunities and industrial placements, tailoring individual needs through discussions with the appropriate tutors and accommodating them whenever feasible.

3.   Program Objectives

1. To provide a comprehensive education in information security that emphasizes critical thinking, problem-solving, and analytical skills across various domains within the field.
2. To prepare students for diverse post-baccalaureate paths, including advanced degree programs, professional certifications, or entry-level positions in information security or related industries.
3. To offer extensive practical training in electronic technology, data analysis, cybersecurity tools, laboratory techniques, and ethical hacking methodologies.
4. To foster strong written and verbal communication skills specifically tailored for conveying complex technical information related to information security.
5. To offer enriching opportunities for experiential learning, such as undergraduate research projects, internships with industry partners, and study-abroad programs, enabling students to gain practical exposure and global perspectives in the field of information security.

4.   Student Learning Outcomes

Information security is the study of the organization and operation of secure systems, encompassing areas such as network security, data protection, risk management, and cybersecurity. Graduates obtain knowledge of the historical, technical, and societal aspects of information security and apply foundational principles toward addressing broader security concepts and challenges. The department offers a Bachelor of Science in Information Security with concentrations in areas such as Cybersecurity, Network Defense, Digital Forensics, and Risk Management, as well as a minor in Secondary Education leading to a Public Instruction License. Additionally, the department provides courses to a diverse range of students from other departments and supports pre-professional programs. The information security curriculum and experiences are designed to prepare students, in part, for entry into professional information security roles, advanced studies in the field, technical careers, and educational pursuits.

Outcome 1: Understanding Complex Systems

Graduates will be able to analyze the structure and operation of complex information systems, including network architectures, databases, and software components, and explain how they interact to ensure information security.

Outcome 2: Effective Communication

Graduates will be able to articulate and convey complex information security concepts effectively through oral presentations, technical reports, and documentation to diverse audiences.

Outcome 3: Practical Skills

Graduates will be proficient in applying practical skills related to information security, including conducting security assessments, implementing security controls, analyzing vulnerabilities, and utilizing appropriate tools and technologies.

Outcome 4: Knowledge of Information Security

Graduates will demonstrate a comprehensive understanding of information security principles, theories, and practices, including the historical development of foundational concepts and the evolving nature of the field.

Outcome 5: Data Analysis and Interpretation

Graduates will possess the ability to collect, analyze, and interpret data relevant to information security, utilizing statistical techniques and data visualization tools to draw meaningful insights and make informed decisions.

Outcome 6: Critical Thinking and Problem Solving

Graduates will demonstrate critical thinking skills by effectively identifying, analyzing, and solving complex information security problems, integrating interdisciplinary knowledge and applying ethical considerations.

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6.   Credits, Grading and GPA

Credits

University of Babylon is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

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	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number 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.				

Calculation of the Cumulative Grade Point Average (CGPA)

1. The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

    CGPA of a 4-year B.Sc. degree:

$$CGPA = [(1^{st} \text{ module score} \times ECTS) + (2^{nd} \text{ module score} \times ECTS) + ...] / 240$$

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CYSE1111	Introduction to Cybersecurity	63	62	5.00	C	---
CYSE1112	Programming Fundamentals I	93	82	7.00	C	---
CYSE1103	Computer Science Fundamentals	63	87	6.00	C	---
CYSE1104	Cybersecurity Laws and Ethics	48	52	4.00	C	---
CYSE1105	Mathematics for Computing	63	37	4.00	S	---
CYSE1106	Arabic Language	33	17	2.00	B	---

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CYSE1201	Information Security Principles	63	62	5.00	C	CYSE1111
CYSE1202	Programming Fundamentals II	93	107	8.00	C	CYSE1112
CYSE1203	Computer Organisation and Architecture	78	72	6.00	C	---
CYSE1204	Network Fundamentals	63	62	5.00	C	---
CYSE1205	Probability and Statistics	63	37	4.00	S	---
CYSE1206	English Language I	33	17	2.00	B	---

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CYSE2301	Object-Oriented Programming	78	72	6.00	C	
CYSE2312	Web Design	63	87	6.00	C	
CYSE2313	Information Theory and Coding	63	37	4.00	S	
CYSE2304	Internet Architecture	78	72	6.00	C	
CYSE2315	Database Systems	78	72	6.00	C	
CYSE2306	English Language II	33	17	2.00	B	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CYSE2401	Malicious Software	63	62	5.00	C	
CYSE2402	Data Structures and Algorithms	78	72	6.00	C	
CYSE2413	Web Application Development	78	72	6.00	C	CYSE2312
CYSE2404	Cryptography	78	72	6.00	C	CYSE2313
CYSE2415	Software Security Principles	63	62	5.00	C	
CYSE2406	Ba'ath System Crimes In Iraq	33	17	2.00	B	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

8.   Contact

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University of Babylon
جامعة بابل

First Cycle – Bachelor's Degree (B.Sc.) –
Information Security

بكالوريوس في تكنولوجيا المعلومات - أمنية المعلومات

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1. Overview

This catalogue is about the courses (modules) given by the program of Information Security to gain the Bachelor of Science degree. The program delivers (48) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظره عامه

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج امنية المعلومات للحصول على درجة بكالوريوس العلوم. يقدم البرنامج (48) مادة دراسية، على سبيل المثال، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
CYSE1111	Introduction to Cybersecurity	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	72
Description			
The "Introduction to Cybersecurity" module provides students with a definition of Cybersecurity, an explanation of its importance, an exploration of the impact of cyber attacks, and an introduction to the processes used to secure data. The module also covers ways to stay safe online, the various types of malware and attacks, as well as the measures used by organizations to mitigate these attacks.			

Module 2

Code	Course/Module Title	ECTS	Semester
CYSE1112	Programming Fundamentals I	8	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	93	107
Description			

The Programming Fundamentals I course is designed to provide students with a solid foundation in programming concepts and principles. This course serves as an introduction to programming, catering to beginners with little or no prior coding experience. Students will learn the fundamental building blocks of programming, including variables, data types, control structures, loops, and functions. Through hands-on coding exercises and projects, students will gain practical experience in problem-solving and algorithm development. Additionally, topics such as debugging and code efficiency will be emphasized to instill good programming practices. This module introduces the C++ programming languages to apply the fundamental programming concepts. By the end of the course, students will have a solid understanding of the core concepts of programming and will be able to write simple programs independently. This course sets the stage for further exploration of programming languages and more advanced concepts in subsequent courses.

Module 3

Code	Course/Module Title	ECTS	Semester
CYSE1103	Computer Science Fundamentals	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	72
Description			

This module presents an introduction to the computer science. The main topics are: Computer Evolving by identifying the Turing model and von Neumann model. Data Storage and Representation; Integer, Real numbers, text, image, audio and video. Programming Languages; Translation, Programming Languages paradigms. Software Engineering; Software life cycle, Software Phases and documentation. File Structure; Sequential, indexed and hashed files. Algorithms; Flowchart, pseudocode and sub algorithms. Data Structure; Stack, Queue, Sorting and Searching.

Module 4

Code	Course/Module Title	ECTS	Semester
CYSE1104	Cybersecurity Laws and Ethics	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	37
Description			

This module introduces ethical considerations in all of the area of Cybersecurity, so students will be able to reason about the consequences of security-related choices and effects. Topic such as code reuse (licensing), professional responsibility and codes of ethics are covered in this module. In addition, the liability aspects of software, regulations; also compliance and issues related to it are discussed. By the end of the course, students will be well-prepared to navigate the legal and ethical challenges associated with Cybersecurity and contribute to the development of secure and ethical practices in the digital realm.

Module 5

Code	Course/Module Title	ECTS	Semester
CYSE1105	Mathematics for Computing	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	37
Description			

The Mathematics for Computing course is designed to provide students with the mathematical knowledge and skills necessary for success in the field of computing. This course covers a range of mathematical topics relevant to computing, including discrete mathematics, logic, sets, functions, and relations, in addition to number theory, linear algebra and mathematical proof. Students will learn about mathematical concepts and techniques that are essential for cryptography, algorithm design, data structures, network security, intrusion detection, and risk analysis. Through a combination of lectures, problem-solving exercises, and practical applications, students will develop a strong foundation in mathematical thinking and reasoning. By the end of the course, students will be equipped with the mathematical tools needed to excel in computing courses and to apply mathematical principles effectively in Cybersecurity.

Module 6

Code	Course/Module Title	ECTS	Semester
CYSE1106	Arabic Language	2	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	0	31	19
Description			
To be followed.			

Module 7

Code	Course/Module Title	ECTS	Semester
CYSE1201	Information Security Principles	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	63	62
Description			

The "Information Security Principles" module is designed to provide advanced in the field of Cyber Security. It covers knowledge and skills in all security domains within the cyber world, including information security, systems security, network security, mobile security, and physical security. Additionally, it presents related technologies and defense and mitigation techniques used to protect businesses.

Module 8

Code	Course/Module Title	ECTS	Semester
CYSE1202	Programming Fundamentals II	8	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	3	93	107
Description			

The Programming Fundamentals II course builds upon the foundational knowledge gained in Programming Fundamentals I, further expanding students' programming skills and understanding. This course delves deeper into programming concepts and introduces more advanced topics. Students will explore topics such as recursion, object-oriented programming, data structures, file input/output, exceptions handling, and Graphical User Interface (GUI). Through a combination of lectures, hands-on

coding exercises, and programming projects, students will gain a deeper understanding of software development principles and practices. They will learn how to design and implement more complex programs, manipulate data structures efficiently, and manage program execution effectively. Additionally, students will develop skills in code optimization, testing, and debugging to create robust and reliable software solutions. By the end of the course, students will have a solid grasp of advanced programming concepts and be equipped with the skills needed to tackle more complex programming challenges in subsequent courses or real-world scenarios.

Module 9

Code	Course/Module Title	ECTS	Semester
CYSE1203	Computer Organisation and Architecture	6	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	72
Description			

This module refers to the structure and function of computer systems. In addition to the assembly language that is adopted in the lab the main topics of this course are the Basic concepts of computer organizations including Computer components, instruction cycle, computer hierarchy. The x86 Architecture also is covered with hardwired and microprogram, control unit and control sequence of instruction. The Memory hierarchy; main memory, cache memory and hard disk. The I/O interface and transfer mode; programmed i/o, interrupts, and DMA. The Instruction Pipeline and Level Parallelism.

Module 10

Code	Course/Module Title	ECTS	Semester
CYSE1204	Network Fundamentals	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	2	78	47
Description			

The "Network Fundamentals" module teaches comprehensive networking concepts and skills, ranging from network applications to the protocols and services provided for those applications. It introduces architectures, models, protocols, and networking elements that connect users, devices, applications, and data across the internet and modern computer networks. It covers topics such as IP addressing and Ethernet fundamentals. By the end of the module, students will be able to build simple local area networks (LANs) that integrate IP addressing schemes, foundational network security, and perform basic configurations for routers and switches.

Module 11

Code	Course/Module Title	ECTS	Semester
CYSE1205	Probability and Statistics	4	2

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
3	1	63	37

Description
The Probability and Statistics for Computing course introduces students to the fundamental concepts and techniques of probability theory and statistics in the context of computing. This course equips students with the necessary skills to analyze and interpret data, make informed decisions, and evaluate the reliability of computing systems. Students will learn the basics of probability, including probability distributions, random variables, and probability functions. They will also explore statistical concepts such as sampling, hypothesis testing and data visualization. Through hands-on exercises and practical examples, students will develop a strong understanding of how probability and statistics can be applied to solve real-world problems in computing. By the end of the course, students will be able to effectively analyze data, make data-driven decisions, and apply statistical techniques to enhance the performance and security of computing systems.

Module 12

Code	Course/Module Title	ECTS	Semester
CYSE1206	English Language	2	2

Class (hr/w)	Lect/Lab./Prac./Tutor	SSWL (hr/sem)	USWL (hr/w)
2	0	33	17

Description
To be followed.

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