Emiratis International University

Faculty: Engineering and information Technology

Department of: Cybersecurity

Cybersecurity
Program Specifications

Prepared by:

1. Dr. Gamil R. S Qaid
2. A. Prof. Malek Nasser Algabri
3. Dr. Nabil Mudhish

Review by:

Development and Quality Assurance Center

Date of preparation

2023 -2024

Contents

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Republic of Yemen

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Emiratis International University

Faculty of engineering and Information Technology

الجمهورية اليمنية

وزارة التعليم العالي والبحث العلمي

الجامعة الإماراتية الدولية

كلية الهندسة وتكنولوجيا المعلومات

1. General Information:

1.	Program Name	Bachelor of Cybersecurity
2.	Program Type	137 Credit Hours
3.	Total Credit Hours	4 Years [8 semesters]
4.	Program Period	Emirates International University
5.	Awarding Institution	Department of Cybersecurity, Faculty of Engineering and Information Technology
6.	Awarded Degree	Bachelor of Cybersecurity
7.	Study System:	Semester Based system (full-time)
8.	Teaching language	English
9.	Departments participating in the program:	High School Certificate – Scientific Section
10.	Location of teaching:	Emiratis International University, Faculty of Engineering and Information Technology, Sana'a
11.	Date of current development of the program:	2023
12.	Prepared by:	Dr. Gamil R. S. Qaid Associate Prof. Malek Nasser Algabri Dr. Nabil Mudhesh
13.	Council Approval Date	

2. Introduction:

The cybersecurity program is designed to provide students with a comprehensive understanding of cybersecurity principles, practices, and technologies. This program adheres to the National Academic Reference Standards (NARS) and aims to equip students with the necessary knowledge and skills to address the ever-evolving challenges of cybersecurity in today's digital landscape.

Through a carefully curated curriculum, this program prepares students for careers in the field of cybersecurity, where they can contribute to safeguarding information systems and protecting sensitive and critical data from threats and vulnerabilities. The program focuses on the practical and theoretical dimensions of its security across a range of fundamental areas, such as application security, information security, human security, networks security, database security, internet security, IOT security, wireless and mobile security, cloud security, incident response and digital forensics, malware analysis, vulnerability assessment and Industrial Control Systems Security.

The graduate of this program could follow a career in different areas such as secure software developer, network security administrator, information security analyst, computer security architect, cyber intelligence officer, penetration tester, academician in cyber security (Lecturer, Trainer, Researcher).

3. University Vision, Mission, Values, and Objectives:

University vision 2025:

The Emirates International university (EIU-Yemen) aspires to be one of the nationally leading and regionally distinct universities.

University mission:

EIU Yemen seeks to Provide a distinguished education and research services That meet the needs of the National and regional labor Market through qualified Human Resources quality academic programs, scientific research directed to knowledge Production and applications and providing a supportive university environment and effective Community partnership.

University Core values

Quality, excellence, creativity, an adherence to ethical professional standards institutional loyalty, teamwork and partnership.

Strategic goals

In order to achieve the vision and mission of the university, seven strategic goals have been set, representing a road map for the University for the next five years, namely.

First orientation: Improving governance and management systems, developing organizational Structure, promoting decentralization and adopting equality and transparency principles.

Second orientation: Expending infrastructure and Developing self-resource.

Third Orientation: Improving the quality of academic programs to meet development needs.

Fourth orientation: Enhancing the values of professional development and investing human resources on professional basis in accordance with the strategic framework of the University.

Five orientation: Developing a university environment conducive to teaching and learning with a view to achieve the professional competencies of the graduate.

Sixth orientation : Building and guiding Scientific research capacities based On planning that is linked to development goals.

Seventh orientation: Establishing a genuine and effective partnerships with the local community, other universities as well as the national and international Labor market.

4. Faculty Vision, Mission, Values, and Objectives:

Vision mission and Goals :

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Vision:
To achieve leadership and Excellence engineering and technological education that meets the needs of comprehensive development and competes locally and regionally

Mission
To Provide outstanding engineering and technological education that contributes to meeting the needs of local and regional labor markets and development requirements through qualified human resources, accredited academic programs scientific research directed at the production and applications of knowledge, a university environment conducive to creativity, cognitive innovation and effective community partnership.

Objectives:
1- Improving governance and management Systems and developing organizational structure in the faculty.

2- Developing the Faculty's infrastructure in accordance with the standards of academic accreditation, with a view to achieve the faculty's vision, mission and strategic goals.
3- Continuous improvement in the quality of academic programs to meet development needs

4- Promoting the values of professional development and investing human resources in the faculty on a professional basis in accordance with the strategic framework of the faculty.

5- Providing a university environment conducive to teaching, learning, creative scientific thinking and continuous self-development.

6- Developing scientific research capabilities in the faculty in accordance with the needs of society and the requirements of development.

7- Building a real and effective partnership with the local community, counterpart institutions and the local and international labor market.

Mission
To provide distinguished engineering and technological education that contributes to meeting the needs of the local and regional labor market and development requirements through qualified human resources, accredited academic Programs and scientific research directed to the production of knowledge and its applications, a university environment that supports creativity, knowledge innovation and effective community partnership.

Values:

Quality, excellence, adherence to ethical and professional standards, institutional loyalty, teamwork, partnership.

Strategic Objectives(goals) :

First Orientation: improvising governance and management systems, completing the vacancies in the organizational structure and developing the organizational structure of the faculty.

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Second Orientation: developing the infrastructure of the faculty, in accordance with academic accreditation standards, and in high of the vision, mission and strategic objectives of the faculty.

Third Orientation: frequent improvement of this quality of academic programs to meet development needs.

Fourth Orientation: Promoting the values of professional development and investing human Resources in the faculty on a professional basis within the Faculty's strategic framework.

Fifth Orientation: creating a supportive university environment for teaching , learning creative scientific thinking, and continues self-development.

Sixth Orientation: Building the development of scientific research capabilities in the faculty in line with the needs of society and development requirements.

Seventh Orientation: Building a genuine and effective partnership with the local community, corresponding institutions, and international labor market.

5. Department Vision, Mission, and Objectives :

Vision of the Department :

To become an excellence center in cybersecurity education and research

Mission of the Department:

Providing high-quality education, conduct cutting-edge research and promote ethical and legal awareness through encourage a stimulating academic environment to serve the community and meet the requirements of the labor market.

Objectives of the Department:

The department aims to:

1- Providing academic programs in the fields of cybersecurity in accordance with academic accreditation.

2- Sseeking to make a meaningful contribution to society by providing high-quality education and promote ethical and legal awareness in the society.

3- Preparing well qualified graduates capable of keeping up with recent scientific development as well as committing to ethical and professional value

4- Providing a stimulating academic environment and encouraging scientific research attracting distinguished cadres of faculty members, and qualifying them academically and professionally.

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5- Establishing strong partnerships and collaborations with various sectors and providing scientific, technical and applied advice and services related to the fields of cybersecurity and contributing to the training of technical personnel.

6. Cyber Cybersecurity

Program Mission:

To qualify graduates with high-quality knowledge, professional skills and ethical values to address the ever-evolving challenges in the field of cybersecurity through a motivated educational environment and the qualified academic staff in order to meet the demands of the local and regional labor market

Program Objectives:

1- Preparing graduates with scientific knowledge and profession skills to meet the needs of the local and regional labor market in the field of Cybersecurity.

2- Enhancing students' cognitive and intellectual skills, enabling them to analyze and solve cyber security problems.

3- Equipping students with a strong foundation for enabling them of understanding and implementing security measures to protect information systems and network, and promote ethical and legal awareness.

4- Developing student's communication skills, teamwork spirit, leadership, lifelong learning and a sense of legal responsibility and ethical commitment.

8. Program Standards & Benchmarks:

A. Academic Standards:

1. Council for Accreditation & Quality Assurance, National Academic Reference Standards
(NARS), Undergraduate Computing Programs, Second Edition, January 2023.
2. Association for Computing Machinery (ACM) IEEE Computer Society (IEEE-CS)   December 2020

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B. Government Rules and Regulations:
1. Regulations by the ministry of Higher Education and Scientific Research.
2. The executive regulations of Act No. 13/2005 of the Law of private universities, higher institutes and colleges, Yemen

C. Program Benchmarks:
1. **Sana'a University – Yemen** **https://su.edu.ye/fcit**

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Cybersecurity Program Information: https://su.edu.ye/fcit/

2. King Saud University **- KSA** https://ascs.ksu.edu.sa/
   Cybersecurity Program Information : https://ascs.ksu.edu.sa/ar/node/788

3. Philadelphia **University – Jordan:** https://www.philadelphia.edu.jo/

Cybersecurity Program Information: https://www.philadelphia.edu.jo/benchmarks-cybersecurity

4. Al Ain university **UEA** : https://aau.ac.ae/
   Cybersecurity Program Information: https://engineering.aau.ac.ae/ar/programs/bachelor-of-science-in-cybersecurity

5. SLIIT Institute of technology - **Sri Lanka**. https://www.sliit.lk/ /
   Cybersecurity Program Information: https://www.sliit.lk/computing/programmes/cyber-security-degree/

6. Amrita Vishwa Vidyapeetham University: https://www.amrita.edu/
   Cybersecurity Program Information: https://www.amrita.edu/program/btech-computer-science-and-engineering-cyber-security/

9. Graduate Attributes:*

The *graduate attributes* of *an undergraduate* Cybersecurity are:

Attrib1: **Knowledgeable**: has deep and comprehensive knowledge in the principles, theories, applications and practices related to cybersecurity.

Attrib2: **Problem Solver and Creative Thinker**:   has the skills of complex cybersecurity problem analysis and solving.

Attrib3: **Developer**: has the skills of developing and implementing secure computing system.

Attrib4: **Technical:**   has the skills of Modern Cybersecurity Tools and Techniques Usage.

Attrib5: **Professional:** committed to professional responsibilities (including social, legal, ethical, and cultural issues) in cybersecurity practices.

Attrib6: **Communicator:** has the skills of communication and negotiation in different context.

Attrib7: **Collaborator and Manager :** has the skills of working as individual and as team member or team leader in different positions.

Attrib8: **Researcher and Self-learner:** committed to Lifelong Learning and has the research skills.

* According to NARS

10.Program Intended Learning Outcomes (PILOs):

The intended learning outcomes of an undergraduate Cybersecurity program are:

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A. Knowledge and Understanding:

Upon successful completion of an undergraduate Cybersecurity Program, graduates should be able to:

A1: Demonstrate a sound knowledge of computing and mathematics that leads to exercise critical judgement for solving real world Cybersecurity problems.

A2: Show deep understanding of Cybersecurity concepts, theories, practices, requirements and issues for computing assets defense, digital forensics investigation, and business continuity.

A: Show an awareness of Cybersecurity policies and procedures, project management methods/tools, Secure Software Development, Threats and Vulnerabilities Analysis, forensics, and administration technologies to meet the organization's goals.

B. Cognitive/ Intellectual Skills:

Upon successful completion of an undergraduate Cybersecurity program, graduates should be able to:

B1: Analyze and evaluate a complex computing security issues and problems, computing system impact on individuals' society and business to identify suitable solutions include security requirements, plans, policies, technologies, tools and techniques.

B2. Distinguish different security polices and select the suitable methods to develop and deliver the required Cybersecurity requirements according to Cybersecurity quality standards to meet different organizations' needs.

C. Practical and Professional Skills:

Upon successful completion of an undergraduate Cybersecurity program, graduates should be able to:

C 1: Design, implement and evaluate a cybersecurity techniques-based solution to meet an individuals and organizations cybersecurity needs.

C 2: Apply and employ acquired cybersecurity principles, theories and practices to develop secure computing-based systems and digital forensic investigation.

C 3: Detect the vulnerabilities, threats, risks, and response and mitigate their effects for preserving computing assets and business continuity in cybersecurity practices.

C4: Employ and manage the cybersecurity project management concepts, simulation tools, operating systems with different platforms and techniques using different techniques and tools to enhance the performance of organizations

D. General and Transferable Skills:

Upon successful completion of an undergraduate Cybersecurity program, graduates should be able to:

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D1. Communicate and negotiate effectively with a range of audiences.

D2. Function effectively as an individual and as a member or leader of a team in multidisciplinary environment.

D3. Engage in lifelong learning for continual development in academic or career life.

D4. Demonstrate professionalism, social and ethical consideration with modern cybersecurity, tools and standards to improve organization performance to make informed judgments in computing practice in accordance with ethical and legal principles.

Program PILOs	Program Objectives			
	PObj1	PObj2	PObj3	PObj4
A1	✓	✓		
A2	✓		✓	
A3				✓
B1		✓		✓
B2			✓	
C1		✓		✓
C2	✓		✓	
C3			✓	✓
C4	✓			✓
D1	✓		✓	✓
D2				✓
D3		✓		
D4	✓		✓	

Teaching Strategy	Description
Lectures /Interactive Lectures	These are interactive lectures weekly conducted in the class and supported with variety of teaching formats including, lectures and multimedia presentations, use of whiteboard to solve examples and illustrating different tasks and problems introduced by the presentation, and class discussions, in which concepts, approaches, and case studies are presented, explored, and shown students what they need to know.
Discussion	This is allowing the students ask questions during the lecture or other students for purpose of clarifying the subject of the lecture and increasing the concentration and absorption of the student and attention.
Illustrations	Illustrations performing an activity so that learners can observe how it is done in order to help prepare learner to transfer theory to practical application. Moreover, this strategy involves the teacher showing learners how to do something
Brainstorming	It is a process for generating multiple ideas/options in which judgment is suspended until a maximum number of ideas has been generated. It is a common teaching approach that is often used by organizing a meeting of a group of students in a round circle, so that students combined focus their thinking on solving a problem in creative ways, and this strategy is usually followed in educational meetings and work sessions to stimulate students, their thinking and discussion.

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Teaching Strategy	Description
Seminar/ Project/Presentation	In each course, different projects which cover a variety tasks in the course will be prepared by the teacher and assigned to different student's groups. Moreover, the teacher needs to set advance work for a selected number of students, and then have the selected students present their work to the whole group, for discussion, criticism and suggestions for improvement. Seminar sessions and presentations provide an opportunity to address questions, queries and problems.
Tutorials	Tutorial classes are provided to create a stimulating environment for students to work through examples, exercises and case studies. Tutorials include worksheets of carefully-designed questions that make students to think about challenging subjects. They are designed to be used after a brief lecture in which students work in pairs or groups.
Case Studies	To be taken in each subject to be aware regarding the courses.
Computer Lab-Based Sessions	Practical Applications using a variety of software or simulations software before the real design and implementation. The student use programing and applications in the laboratory-based sessions that are required for some courses to balance between theoretical and practical issues. A variety of web-based searches students will be assigned to learn how they can search for solutions using the Web.
Directed Self-Study/ Self-Learning	Students are encouraged to undertake independent study to both supplement and consolidate what are being learned. Students are encouraged to undertake independent study in some topics to consolidate what is being learned. Self- learning is required for students to "talk science" and encourage them to teach each other.
Training	The training is used to relate the theoretical aspects with the practical ones. The course of training is a sequence of events that trainer needs it for a particular job or activity.
Internship	This is done by identifying specific places related to the subject of the course, in which the student must know how the work is conducted in order to gain practical experience
Problem Solving	This allows students to become more active in their learning as they work out which information, they need to find out how to solve a particular problem

Assessment Strategy	Description
Written Examinations (Mid and Final Terms)	Mid-term test is conducted in the between 6th – 8th weeks and final exam is conducted at the end of each course. Both tests are closed book, closed notes. Mid. term & Final exams for each course is required for all courses except Graduation Projects. These exams will evaluate the extent in which the student understanding of theoretical and applied subjects
Quizzes	Some points are assigned to multiple choice questions and Quizzes in order to asses' student ability to follow the lecturer during the study course. quizzes are related to past as well as topics discussed in the period. This helps students develop self-confidence, readiness, and accuracy in major exams.

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Assessment Strategy	Description
Oral Exams	This strategy is applied by conducting oral conversations through personal interviews or asking students questions to assess their educational attainment. It is useful to evaluate the extent of understanding the different subjects of the course
Technical/practical Report/Project/Practical Lab Sessions	Assessing students to their ability to write theoretical and lab reports as well as the understanding of organizing the reports. The practical lab sessions are required for some courses.
Assignments	Students are given special tasks, exercises, puzzles, and activities during the class or at homes.
Coursework Activities	Course work Activities is one of the assessment methods by which it can evaluate students.
Case studies	This strategy is applied by selecting various cases in the field of cybersecurity to study it in depth through collecting data then analyzing it and interparent it
Presentations	It is applied in some courses as needed. Students are assigned to prepare for specific topics and a specific time is allocated for them. Students review the topics and discuss them publicly in front of their colleagues and in the presence of a number of faculty members.

11. Alignment of Program Intended Learning Outcomes (PILOs) to Teaching Strategies and Assessment Methods:

PILOs	Teaching Strategy	Assessment Methods
Knowledge and Understanding A1, A2, A3	• Lectures /Interactive lectures • Discussion • Illustrations • Case Studies • Directed self-study/ Self-learning • Exercises	• Written tests (mid and final terms) • Quizzes • Oral exams • Assignments
Intellectual Skills B1, B2	• Lectures /Interactive lectures • Discussion • Illustrations • Preparation Seminar/ project/presentation • Tutorials • Brainstorming • Case Studies • Problem solving • Team work (group learning)	• Written examinations • (Mid and final Terms) • Quizzes • Oral exams • Technical Report • Assignments • Coursework Activities • Case studies • Presentations.
Professional & practical skills C1, C2, C3, C4	• Interactive lectures • Discussion • Illustrations • Preparation Seminar/ project/presentation • Tutorials	• Written examinations • (Mid and final Terms) • Oral exams • Technical/Practical Report/ Practical Lab Sessions

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PILOs	Teaching Strategy	Assessment Methods
	• Case Studies • Computer lab-based sessions • Directed self-study/ Self-learning • Training • Problem solving • Team work (group learning) • Group project	• Assignments • Coursework Activities • Case studies • Presentations. • Individual/Group Project
General & Transferable Skills **D1, D2, D3, D4**	• Preparation and presentation • Tutorials • Case Studies • Directed self-study/ Self-learning • Team work (group learning) • Exercises and home work	• Technical Report • Coursework Activities • Case studies • Presentations.

12. Project Assessment:

Each project will be assessed as follows:

Item	Marks Distribution
Research project supervisor	40%
Internal examiner: a member of the department teaching staff.	30%
External examiner: a qualified external examiner (either from other departments of the faculty or from another university)	30%
Total	**100**

13. Training Course Assessment (if any):

The training course will be assessed through:

- Course specification document
- Internship with local organizations related to cybersecurity
- Coordinator
- Head of department
- Manger the place of training

14. Intended Learning Outcomes Mapping:

- See the Course specification document

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15. Program Structure:

No	Requirements		No. of Courses	Credit Hours	Rational Weight %
1.	University Requirements	Compulsory	8	17	12.41-%
		Elective	--	--	
2.	Faculty Requirements	Compulsory	7	17	12.41-%
		Elective	--	--	
3.	Department Requirements	Compulsory	--	--	---%
		Elective	--	--	
4.	Program Requirements	Compulsory	30	88	68.61 %
		Elective	2	6	
5.	Field Training (if any)	Compulsory	1	3	2.19 %
6.	Research Project Courses	Compulsory	2	6	4.38 %
	Total:		--	137	100%

15.1. University Requirements

	Compulsory Courses								
No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L*	T**	P***	Prerequisites, Co-requisites
1.	1/1	UNI101	Islamic Culture	الثقافة الإسلامية	2	2	-	-	
2.	1/1	UNI103	Arabic Language 1	لغة عربية 1	2	2	-	-	
3.	1/1	UNI105	English Language 2	لغة إنجليزية 1	2	2	-	-	
4.	1/1	UNI107	Arabic Israeli Conflict	الصراع العربي الإسرائيلي	2	2	-	-	
5.	1/1	UNI100	Introduction to Computer	مقدمة في الحاسوب	3	2	2	-	
6.	1/2	UNI102	National Culture	الثقافة الوطنية	2	2	-	-	
7.	1/2	UNI104	Arabic Language 1	لغة عربية 2	2	2	-	-	Arabic Language 2
8.	1/2	UNI106	English Language 2	لغة إنجليزية 2	2	2	-	-	English Language 2
			Total		17	14	2		

* L= lecture ** T=tutorial/seminar, *** P= lab/workshop/training/clinical

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15.2. Faculty Requirements

			Compulsory Courses						
No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	1/1	EIT110	Mathematics 1	رياضيات (1)	3	2	-	2	
2	1/2	EIT111	Mathematics 2	رياضيات (2)	3	2	-	2	Mathematics 1
3	2/2	EIT211	Probability & Statistics	الإحصاء والاحتمالات	3	2	2	-	
4	2/1	EIT212	Technical English	الإنجليزي التقني	2	2	-	-	English Language 1
5	1 /2	EIT213	Communication Skills	مهارات الاتصال	2	2	-	-	
6	3/2	EIT311	Project Management	إدارة المشاريع	2	2	-	-	
7	3/1	EIT312	Scientific Research Fundamentals	أساسيات البحث العلمي	2	2	-	-	
			Total		17	14	2	4	

15.3. Program Major

			Compulsory Courses						
No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1.	1 / 2	CYS120	Introduction to Cybersecurity	مقدمة في الامن السيبراني	3	2	-	2	Introduction to Computer
2.	1 / 2	AI130	Computer Programming1	برمجة الحاسوب 1	3	2	-	2	Introduction to Computer
3.	2 / 1	AI231	Computer Programming 2	برمجة الحاسوب 2	3	2	-	2	Computer Programming, I
4.	1 / 2	EIT114	Discrete Mathematic	رياضيات متقطعة	3	2	2	-	Mathematics 2
5.	2 / 1	AI223	Database systems	نظم قواعد البيانات	3	2	-	2	Introduction to Computer
6.	2 / 1	AI236	Web Technology Fundamentals	اساسيات تقنية الويب	3	2	-	2	Introduction to Computer
7.	2 / 1	**CYS251**	Computer Networks	شبكات حاسوب	3	2	-	2	Introduction to Computer
8.	2 / 1	**CYS261**	Information System Security Management	إدارة امن نظم المعلومات	3	2	-	2	Introduction to Cybersecurity
9.	2 / 1	AI241	Computer Organization and Architecture	معمارية وتنظيم الحاسوب	3	2	-	2	Introduction to Computer
10.	2 / 2	**CYS260**	Web Development and Security	امن وتطوير الويب	3	2	-	2	Web Technology Fundamentals
11.	2 / 2	AI230	Object-Oriented Programming	البرمجية الموجهة للكائنات	3	2	-	2	Computer Programming II
12.	2 / 2	AI240	Operating Systems	نظم تشغيل	3	2	-	2	Computer Organization and Architecture
13.	2 / 2	**CYS250**	Switching and Routing	التوجيه والتبديل	3	2	-	2	Computer Networks
14.	2 / 2	**CYS262**	Database Management and Security	إدارة وامن قواعد البيانات	3	2	-	2	Database systems

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No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
15.	2 / 2	CYS264	Information Security Policies and Laws	سياسات وامن المعلومات	2	2		-	Information System Security Management
16.	3 / 1	CYS331	Data structure and algorithms	هياكل البيانات والخوارزميات	3	2	-	2	Object-Oriented Programming
17.	3 / 1	CYS333	Advance Programming	البرمجة المتقدمة	3	2	-	2	Object-Oriented Programming
18.	3 / 1	CYS361	Cryptography	التشفير	3	2	-	2	Object-Oriented Programming
19.	3 / 1	CYS351	Wireless Networking and Security	الشبكات اللاسلكية وأمانها	3	2	-	2	Networks Switching and Routing
20.	3 / 1	CYS335	Mobile Applications Security	أمن تطبيقات الموبايل	3	1	-	4	Introduction to Cybersecurity
21.	3 / 2	CYS340	System Analysis and design	تحليل وتصميم النظم	3	2	2	-	---
22.	3 / 2	CYS332	Secure Software Development	تطوير البرمجيات الامنة	3	2	2	-	Web Development and Security
23.	3 / 2	CYS363	Threats and Vulnerabilities Analysis	تحليل التهديدات والثغرات	3	2	-	2	Wireless Networking and Security
24.	3 / 2	CYS362	Digital Forensics	التحقيق الجنائي الرقمي	3	2	-	2	----
25.	3 / 2	CYS364	Ethics and Compliance	الاخلاقيات والامثال	2	2	-	-	Information Security Policies and Laws
26.	4 / 1	CYS461	Artificial Intelligence for Cybersecurity	الذكاء الاصطناعي للأمن السيبراني	3	2	-	2	Introduction to Cybersecurity
27.	4 / 1	CYS463	Reverse Engineering and System Management	الهندسة العكسية وإدارة الأنظمة	3	2	-	2	Advance Programming
28.	4 / 1	CYS465	Ethical hacking and Penetration Testing	الهكر الأخلاقي وفحص الاختراق	3	2	-	2	Networks security
29.	4 / 1	CYS491	Elective 1	مختارة 1	3	2	-	2	
30.	4 / 2	CYS460	IoT Security	أمن انترنت الاشياء	3	2		2	Computer Networks
31.	4 / 2	CYS462	Personal Privacy and Social Engineering	الخصوصية الشخصية والهندسة الاجتماعية	3	3	-	-	Ethics and Compliance
32.	4 / 2	CYS492	Elective 2	مختارة 2	3	2	-	2	
Total					**94**	**60**	**4**	**52**	

			Elective Courses:						
No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L*	T**	P**	Prerequisites, Co-requisites
1.	4 / 1		Selected topics in Cybersecurity	مواضيع مختارة في الامن السيبراني	3	2		2	
2.	4 / 1		Information Hiding Techniques	تقنيات إخفاء المعلومات	3	2		2	
3.	4 / 1		Risk Management and Analysis	إدارة وتحليل المخاطر	3	2	-	2	
4.	4 / 1		Mobile Forensics	التحليل الجنائي المتنقل	3	2	-	2	

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No	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
5.	4 / 2		System Components Security and Testing	فحص أمن عناصر النظام	3	2	-	2	
6.	4 / 2		Blockchain Security	امن البلوكتشين	3	2	-	2	
7.	4 / 2		Biometric Authentication	المصادقة الحيوية	3	2	-	2	
Total					**6**	**4**		**4**	

Field Training Courses (if any)									
No	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	3/2	**CYS380**	Internship	تدريب ميداني	3	-	-	-	At least the student should completed 80 C.H
Total					**3**				

Research Project Courses									
No	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	4/1	**CYS481**	Graduation Project1	مشروع تخرج 1	3	-	-	-	At least the student should completed 80 C.H
2	4/**2**	**CYS482**	Graduation Project2	مشروع تخرج 2	3	1		4	Graduation Project1
Total					**6**	**1**		**4**	

16.Study Plan:

Level 1

Term 1									
No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	1/1	UNI101	Islamic Culture	الثقافة الإسلامية	2	2	-	-	--
2	1/1	UNI103	Arabic Language I	لغة عربية 1	2	2	-	-	--
3	1/1	UNI104	English Language I	لغة إنجليزية 1	2	2	-	-	--
4	1/1	UNI107	Arabic Israeli Conflict	الصراع العربي الإسرائيلي	2	2	-	-	--
5	1/1	UNI100	Introduction to Computer	مقدمة في الحاسوب	3	2	-	2	--
6	1/1	EIT111	Mathematics I	رياضيات 1	3	2	2	-	--
7	1/1	UNI102	National Culture	الثقافة الوطنية	2	2	-	-	--
Total					**16**	**14**	**2**	**2**	

Term 2									
No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	1/2	UNI103	Arabic Language 2	لغة عربية 2	2	2	-	-	Arabic Language1
2	1/2	UNI106	English Language 2	لغة إنجليزية 2	2	2	-	-	English Language 1

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3	1/2	EIT112	Mathematics 2	رياضيات 2	3	2	2	-	--
4	1/2	CYS120	Introduction to Cybersecurity	مقدمة في الامن السيبراني	3	2	-	2	Introduction to Computer
5	1/2	AI130	Computer Programming1	برمجة الحاسوب 1	3	2	-	2	Mathematics 1
6	1/2	EIT114	Discrete Mathematic	رياضيات متقطعة	3	2	2	-	Mathematics2
7	1/2	EIT213	Communication skills	مهارات الاتصال	2	2	-	-	English 2
Total					**18**	**14**	**4**	**4**	

Level 2

Term 1

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	2 / 1	AI231	Computer Programming 2	برمجة الحاسوب 2	3	2	-	2	Computer Programming, I
2	2 / 1	AI223	Database systems	نظم قواعد البيانات	3	2	-	2	Introduction to Computer
3	2 / 1	AI236	Web Technology Fundamentals	اساسيات تقنية الويب	3	2	-	2	Introduction to Computer
4	2 / 1	CYS251	Computer Networks	شبكات حاسوب	3	2	-	2	Introduction to Computer
5	2 / 1	CYS261	Information System Security Management	إدارة امن نظم المعلومات	3	2	-	2	Introduction to Cybersecurity
6	2 / 1	AI241	Computer Organization and Architecture	معمارية وتنظيم الحاسوب	3	2	-	2	Introduction to Computer
7	2 / 1	EIT212	Technical English	الإنجليزي التقني	2	2	-	-	
Total					**20**	**14**	**-**	**12**	

Term 2

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	2 / 2	EIT211	Probability and Statistics	الإحصاء والاحتمالات	3	2	2	-	--
2	2 / 2	CYS260	Web Development and Security	أمن وتطوير الويب	3	2	-	2	Web Technology Fundamentals
3	2 / 2	AI230	Object-Oriented Programming	البرمجية الموجهة للكائنات	3	2	-	2	Computer Programming II
4	2 / 2	AI240	Operating Systems	نظم تشغيل	3	2	-	2	Computer Organization and Architecture
5	2 / 2	CYS250	Switching and Routing	التوجيه والتبديل	3	2	-	2	Computer Networks
6	2 / 2	CYS262	Database Management and Security	إدارة وامن قواعد البيانات	3	2	-	2	Database systems
7	2 / 2	CYS264	Information Security Policies and Laws	سياسات وامن المعلومات	2	2	-	-	Information System Security Management
Total					**20**	**14**	**2**	**10**	

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Level 3

Term 1

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	3 / 1	EIT312	Scientific Research Fundamentals	أساسيات البحث العلمي	2	2	-	-	---
2	3 / 1	CYS331	Data structure and algorithms	هياكل البيانات والخوارزميات	3	2	-	2	Object-Oriented Programming
3	3 / 1	CYS333	Advance Programming	البرمجة المتقدمة	3	2	-	2	Object-Oriented Programming
4	3 / 1	CYS361	Cryptography	التشفير	3	2	-	2	Object-Oriented Programming
5	3 / 1	CYS351	Wireless Networking and Security	الشبكات اللاسلكية وأمانها	3	2	-	2	Switching and Routing
6	3 / 1	CYS335	Mobile Applications Security	أمن تطبيقات الموبايل	3	1	-	4	Introduction to Cybersecurity
Total					**17**	**11**		**12**	

Term 2

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	3 / 2	CYS340	System Analysis and design	تحليل وتصميم النظم	3	2	2	-	---
2	3 / 2	CYS332	Secure Software Development	تطوير البرمجيات الامنة	3	2	2	-	Web Development and Security
3	3 / 2	EIT311	Projects Management	إدارة المشاريع	2	2	-	-	Scientific Research Fundamentals
4	3 / 2	CYS363	Threats and Vulnerabilities Analysis	تحليل التهديدات والثغرات	3	2	-	2	Wireless Networking and Security
5	3 / 2	CYS362	Digital Forensics	التحقيق الجنائي الرقمي	3	2	-	2	----
6	3 / 2	CYS364	Ethics and Compliance	الاخلاقيات والامثال	2	2	-	-	Information Security Policies and Laws
7	3 / 2	CYS380	Internship	تدريب ميداني	3	-	-	-	----
Total					**19**	**12**	**6**	**4**	

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Level 4

Term 1

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	4 / 1	CYS461	Artificial Intelligence for Cybersecurity	الذكاء الاصطناعي للأمن السيبراني	3	2	-	2	Introduction to Cybersecurity
2	4 / 1	CYS463	Reverse Engineering and System Management	الهندسة العكسية وإدارة الأنظمة	3	2	-	2	Advance Programming
3	4 / 1	CYS465	Ethical hacking and Penetration Testing	الهكر الأخلاقي وفحص الاختراق	3	2	-	2	Networks security
4	4 / 1	CYS491	Elective 1	مختارة 1	3	2	-	2	
5	4 / 1	CYS481	Graduation Project1	مشروع تخرج 1	3	-	-	-	Scientific Research Fundamentals
			Total		**15**	**8**		**8**	

Term 2

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L	T	P	Prerequisites, Co-requisites
1	4 / 2	CYS460	IoT Security	أمن انترنت الاشياء	3	2		2	Computer Networks
2	4 / 2	CYS462	Personal Privacy and Social Engineering	الخصوصية الشخصية والهندسة الاجتماعية	3	3	-	-	Ethics and Compliance
3	4 / 2	CYS492	Elective 2	مختارة 1	3	2	-	2	
4	4 / 2	CYS482	Graduation Project 2	مشروع تخرج 2	3	1		4	Graduation Project1
			Total		**12**	**8**		**8**	

Elective Courses:

No.	Level-Sem.	Course Code	Course Name	اسم المقرر	Cr. Hrs.	L*	T**	P***	Prerequisites, Co-requisites
1	4 / 1		Selected topics in Cybersecurity	مواضيع مختارة في الامن السيبراني	3	2		2	Introduction to Cybersecurity
2	4 / 1		Information Hiding Techniques	تقنيات إخفاء المعلومات	3	2		2	Object-Oriented Programming
3	4 / 1		Risk Management and analysis	إدارة وتحليل المخاطر	3	2	-	2	Projects Management
4	4 / 1		Mobile Forensics	التحليل الجنائي المتنقل	3	2		2	**Operating Systems/ Mobile Applications Security**
5	4 / 2		System Components Security and Testing	فحص أمن عناصر النظام	3	2	-	2	Operating Systems
6	4 / 2		Blockchain security	أمن البلوكتشين	3	2		2	Artificial Intelligence for Cybersecurity
7	4 / 2		Biometric Authentication	المصادقة الحيوية	3	2		2	Digital Forensics
			Total		**21**	**14**		**14**	

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17. Distribution of Total Credit Hours:

Courses		No of Courses, CH, %	First level 1st	First level 2nd	Second level 1st	Second level 2nd	Third level 1st	Third level 2nd	Fourth level 1st	Fourth level 2nd	Total	%
University Requirements	Compulsory	No. of courses	5	3	0	0	0	0	0	0	8	12.41 %
		Credit Hours	11	6	0	0	0	0	0	0	17	
		%	8.03	04.38	0	0	0	0	0	0	12.41	
	Electives	No. of courses	0	0	0	0	0	0	0	0	0	
		Credit Hours	0	0	0	0	0	0	0	0	0	
		%	0	0	0	0	0	0	0	0	0	
Faculty Requirements	Compulsory	No. of courses	1	2	1	1	1	1	0	0	7	12.41 %
		Credit Hours	3	5	2	3	2	2	0	0	17	
		%	2.19	3.65	1.46	2.19	1.46	1.46	0	0	12.4`	
	Electives	No. of courses	0	0	0	0	0	0	0	0	0	0
		Credit Hours	0	0	0	0	0	0	0	0	0	
		%	0	0	0	0	0	0	0	0	0	
Department Requirements	Compulsory	No. of courses	0	0	0	0	0	0	0	0	0	0
		Credit Hours	0	0	0	0	0	0	0	0	0	
		%	0	0	0	0	0	0	0	0	0	
	Electives	No. of courses	0	0	0	0	0	0	0	0	0	0
		Credit Hours	0	0	0	0	0	0	0	0	0	
		%	0	0	0	0	0	0	0	0	0	
Program Requirements	Compulsory	No. of courses									30	
		Credit Hours									88	
		%									64.23	
	Electives	No. of courses	0	0	0	0	0	0	1	1	2	4.38 %
		Credit Hours	0	0	0	0	0	0	3	3	6	
		%	0	0	0	0	0	0	2.19	2.19	4.38	
Field training		No. of courses	0	0	0	0	0	1	0	0	1	2.19 %
		Credit Hours	0	0	0	0	0	3	0	0	2.19	
		%										
Research Project		No. of courses	0	0	0	0	0	0	1	1	2	
		Credit Hours	0	0	0	0	0	0	3	3	6	
		%	0	0	0	0	0	0	2.19	2.19	4.38	4.38 %
Total		No. of courses									50	
		Credit Hours									137	
		%									100%	
	Level	%										

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18. Admission/Selection/Transfer Requirements:

1. Admissions to the program shall be made as per the admission rules set by the Ministry of Higher Education and Scientific Research as well as University admission guidelines.
2. General Secondary school certificate (Science Section) or any equivalent certificate with grade as specified in the admission rules made by Ministry of Higher Education and Scientific Research.
3. Pass the aptitude test and personal interview.
4. Any necessary requirement for specialization, decided by the Scientific Section.

19. Graduation Requirements:

1. Student attendance should not be less than 75%.
2. Student will graduate after successfully passing all program requirements.
3. Total credit hours for the program is 137 credit hours.
4. Minimum score for any student to pass any credit hours course is 50% degree

20. Grading System:

From 90% to 100% of total marks	Excellent
From 80% to less than 90%	Very Good
From 65% to less than 80%	Good
From 50% to less than 65%	Pass
Less than 50%	Poor/Fail

21. Facilities Required for Running the Program:

1. Classrooms equipped with modern means, screens or projectors
2. computer labs
3. showroom
4. An integrated library containing many scientific and academic books and periodicals related to the specialization
5. Internet service and activation of subscription with international magazines and organizations

22. Program Assessment:

	Type of the Sample who Assess the program	Instruments used	Sample
1	Final year students	**Questionnaire/** Survey	A sample of final year students
2	Graduates	Interview	Sample of graduates
3	Employer	Survey	A sample of institutions and relevant authorities

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| 4 | External resident | Report | Experts in the field of quality and accreditation |
| 5 | Quality Assurance Unit at the University | Self-Assessment Tool + Report | Program professors + sample of students at different levels |

23. Program Policies:

Based on University Regulations

1.	**(Class Attendance) :**
	A student should attend not less than 75 % of total hours of the subject; otherwise he/she will not be able to take the exam and will be considered as exam failure. If the student is absent due to illness, he/she should bring a proof statement from university Clinic. If the absent is more than 25% of a course total contact hours, student will be required to retake the entire course again.
2.	**(Tardy) :**
	For late in attending the class, the student will be initially notified. If he repeated lateness in attending class he/she will be considered as absent.
3.	**(Exam Attendance/Punctuality) :**
	A student should attend the exam on time. He/she is permitted to attend an exam half one hour from exam beginning, after that he/she will not be permitted to take the exam and he/she will be considered as absent in exam.
4.	**(Assignments & Projects) :**
	Assignments and projects are given as per course specification; the student has to submit all the assignments for checking on time, mostly one week after given the assignment.
5.	**(Cheating) :**
	For cheating in exam, a student will be considered as fail. In case the cheating is repeated three times during his/her study the student will be disengaged from the Faculty.
6.	**(Plagiarism) :**
	Plagiarism is the attending of a student the exam of a course instead of another student. If the examination committee proofed a plagiarism of a student, he/she will be disengaged from the Faculty. The final disengagement of the student from the Faculty should be confirmed from the Student Council Affair of the university or according to the university roles.
7.	**(Other policies) :**
	- Mobile phones are not allowed to use during a class lecture. It must be closed; otherwise the student will be asked to leave the lecture room. - Mobile phones are not allowed in class during the examination. - Lecture notes and assignments might be given directly to students using soft or hard copy.

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Annex- 1, Survey of Similar Accredited Programs at National and International Universities (Benchmarks)

Program No.	The Academic Program	The University	Website	The Faculty	The Department	The Country	Degree Award at Program Completion	Program Accrediting Body	Year of Accreditation	Study Duration
Current Program	**Cybersecurity**	**Emirates International University**	**https://www.eiu-edu.net/**	**Faculty of Engineering and Information Technology**	**Cyber Security**	**Yemen**	**ministry of higher education and scientific research Yemen**	**bachelor in cyber security**	**2023**	**4 years**
The 1st Program	Cyber Security	Sana'a University	https://su.edu.ye/fcit	Faculty of Computer and Information Technology	Cyber Security	Yemen	ministry of higher education and scientific research Yemen	Bachelor in cyber security	2022	4 years
The 2nd Program	Cyber Security and Digital Forensics	King Saud University	https://ascs.ksu.edu.sa/	College of Computer Science & Information	Information Technology	KSA	Ministry of Higher Education	Bachelor of Science in Information Technology – Cyber Security Track(CYS)	2005	4 years
The 3rd Program	Cyber Security	Philadelphia	https://www.philadelphia.edu.jo/	Faculty of Information Technology	Information Security and Cybersecurity	Jordan	Ministry of Higher Education	bachelor in Information Security and Cybersecurity	2002	4 years
The 4th Program	Cybersecurity	Al Ain	https://aau.ac.ae/	College of engineering	Cybersecurity	EUA	ABET	Bachelor of Science in Cybersecurity	2019	4 years
The 5th Program	Cyber Security	SLIIT	https://www.sliit.lk/	Faculty of computing	Cyber Security	Sri Lanka	Ministry of Higher Education	bachelor in cyber security	2014	4 years
The 6th Program	Cyber Security	Amrita Vishwa Vidyapeetham	https://www.amrita.edu	School of Computer Science	Computer Science and Engineering	India	Ministry of Higher Education	bachelor in Computer Science and Engineering (Cyber Security)	2006	4 years

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Annex- 2, Survey of PILOs for Similar Accredited Programs at National and International Universities

Program PILOs	Similar Accredited Programs					Accreditation Bodies	
	University of Sana'a	University of King Souad	University of Philadelphia	University of Al Ain	University of Amrita Vishwa Vidyapeetham	NARS	International (if any) ………………
A1	✓a1	✓1	✓a1		✓1	✓1	
A2	✓a2		✓a2			✓a2	
A3	✓a3	✓6	A5			✓a2	
B1	✓b1		✓b1			✓b1	
B2	✓b2	✓7	✓b2 b3 b4	✓1	✓1	✓1	
C1	✓c4	✓8		✓2	✓2	✓3	
C2	✓c2	✓5	✓c7	✓6		✓4	
C3	✓c1	✓4	✓c8				
C4	✓c3		✓c6			✓5	
D1	✓d1	✓9	✓d1	✓3	✓3	✓10	
D2	✓d2		✓d4	✓5		✓9	
D3	✓d4		✓d7			✓12	
D4	✓d3			✓4	✓4		

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Annex- 3, Survey of Number of Courses and Credit Hours of Similar Programs

University		Sana'a University		King Saud University		Philadelphia University		SLIIT		Amrita Vishwa Vidyapeetham		Average	
Total Courses and Cr. Hrs.		Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses
University	Compulsory	15	5	11	4	15	5	--	--	17	9	--	--
	Electives	--	--	10	4	12	4	--	--	--		--	--
Requirements	Percentage	11.11%	11.11%	16.03%	16.03%	20.15%	20.15%	--%	--%	--%	--%	--%	--%
Faculty	Compulsory	30	10	17	8	24	6	24	6	9	--	--	--
	Electives	--	--	--	--	--	--	--	--	--	--	--	--
Requirements	Percentage	22.22%	22.22%	12.98%	12.98%	17.91%	17.91%	17.02%	17.02%	--%	--%	--%	--%
Department	Compulsory	--	--	25	8	--	--	--	--	--	--	--	--
	Electives	--	--	--	--	--	--	--	--	--	--	--	--
Requirements	Percentage	---%	--%	19.08%	19.08%	--%	--%	--%	--%	--%	--%	--%	--%
Program	Compulsory	75	25	49	17	72	25	101	32	104	--	--	--
	Percentage	55.56 %	55.56 %	37.40%	38.17%	53.73%	53.73%	71.63%	71.63%	--%	--%	--%	--%
	Electives	9	3	12	4	9	3	16	4	12	--	--	--
	Percentage	6.67 %	6.67%	9.16%	9.16%	6.72%	6.72%	11.35%	11.35%	--%	--%	--%	--%
	Graduation Project	6	2	6	2	--	--	--	--	--	--	--	--
	Percentage	4.44 %	4.44 %	4.58%	4.58%	--%	--%	--%	--%	--%	--%	--%	--%

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University		Sana'a University		King Saud University		Philadelphia University		SLIIT		Amrita Vishwa Vidyapeetham		Average	
Requirements	Summer Training	--	--	1	1	2	1	--	--	--	--	--	--
	Percentage	---%	--%	0.76%	0.76%	1.49%	1.49%	--%	--%	--%	--%	--%	--%
	Industrial Training	--	--	--	--	--	--	--	--	--	--	--	--
	Percentage	---%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
	Practical Skills	--	--	--	--	--	--	--	--	--	--	--	--
	Percentage	---%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%	--%
Other Courses		--	--	--	--	--	--	--	--	--	--	--	--
Total		Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses	Cr. Hrs.	Courses		
		135	45	131	47	134	44	141	42	--	--		

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الحمهورية اليمنية
وزارة التعليم العالي والبحث العلمي
الجامعة الإماراتية الدولية
كلية الهندسة وتكنولوجيا المعلومات

Annex- 4, Comparison of Program Courses and Similar Programs Courses

#	EIU Program Course	CH	L	T	P	Sana'a University Course	CH	L	T	P	King Saud University Course	CH	L	T	P	University of Philadelphia Course	CH	L	T	P	University of Al Ain Course	CH	L	T	P	University of SLIIT Course	CH	L	T	P	Amrita Vishwa Vidyapeetham University Course	CH	L	T	P
1	Islamic Culture	2	2	-	-	Islamic Culture	3	0	0	3	دراسات في السيرة النبوية	2									Islamic Culture	3									Cultural Education – 1	2	0	3	2
2	Arabic Language I	2	2	-	-	Arabic Language (1)	3	0	0	3						Communication skill (Arabic language)	3				Arabic Language	3													
3	English Language I	2	2	-	-	English Language (1)	3	0	0	3	اللغة الإنجليزية	3				Communication skills (English 1)	3				English I	3													
4	Arabic Israeli Conflict	2	2	-	-	Arabic Israeli Conflict	3	2	-	2	الأسرة في الإسلام	2				Military Sciences **	3																		
5	Introduction to Computer	3	2	-	2	Introduction to Computer	3	0	2	2						Introduction to Information Systems and Technology	3																		
6	Mathematics I	3	2	2	-	Mathematics (1)	3	2	0	2	حساب التفاضل	3									Calculus I	3													
7	National Culture	2	2	-	-	National Culture	3	2	-	2						National Education	3				UAE Studies	3									Cultural Education – II	2	0	0	2
8	Arabic Language 2	2	2	-	-	Arabic Language (2)	3	0	0	3						Communication skills (English 2)	3				Arabs & Muslims' Contributions to Arts & Science	3													
9	English Language 2	2	2	-	-	English Language (2)	3	0	0	3											English 2	3													
10	Mathematics 2	3	2	2	-	Mathematics (2)	3	2	0	2	حساب التفاضل	4									Calculus II	3													
11	Introduction to Cybersecurity	3	2	-	2	Cybersecurity fundamentals	3	3	2	3						Principles of Cryptography	3									Introduction to Cyber Security	04				Cyber Security Essentials	3	0	3	3

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#	EIU Program					Sana'a University					King Saud University					University of Philadelphia					University of Al Ain					University of SLIIT					Amrita Vishwa Vidyapeetham University				
	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P
12	Computer Programming1	3	2	-	2	Programming Fundamentals	3	0	2	2	مبادئ البرمجة	4				Programming Fundamentals (1)	3				Introduction to Programming	3									Computer Programming	3	0	0	3
13	Discrete Mathematic	3	2	2	-	Discrete Mathematics	3	2	0	2	الرياضيات المحددة	3				Discrete Mathematics	3														Discrete Mathematics	4	1	0	4
14	Communication skills	2	2	-	-	Communication Skills	3	0	3	3	كتابة التقارير (1)	2				Language Skills (1)	3				Computer Skills	3				Professional Skills	02								
15	Computer Programming 2	3	2	-	2	Computer programming	3	2		2						Programming Fundamentals (2)	3														Amrita Value Program II	1	0	0	1
16	Database systems	3	2	-	2	Database Fundamentals	3	0	2	2						Database Fundamentals	3				Database Systems	3													
17	Web Technology Fundamentals	3	2	-	2	Web Design	3	0	2	2						Introduction to Web Programming	3				Web Development	3													
18	Computer Networks	3	2	3	2	Computer Networks (1)	3	0	2	2	شبكات الحاسب	3				Computer Networks Fundamentals	3				Computer Networks	3				Advanced Networking Technologies	04				Computer Networks	3	0	0	3
19	Information System Security Management	3	2	-	2	Information Security Management	3	0	2	2	أساسيات أمن المعلومات	3				Information Security Fundamentals	3				Computer Security Fundamental	3				Information Security Policy and Management	02								
20	Computer Organization and Architecture	3	2	-	2	Computer Organization	3	0	2	2	معمارية وتنظيم الحاسبات	3				Language Skills (2)	3														Computer Organization and Architecture	4	0	3	4
21	Technical English	2	2	-	-	Communication Skills	3	0	2	-	لغة إنجليزية تخصصي	3																			Technical Communication	3	0	3	3
22	Probability and Statistics	3	2	2	-	Probability and Statistics	3	2	0	2	مدخل الى الاحتمالات والإحصاء	3				Introduction to Statistics and Probabilities	3				Probability Theory and Statistics	3									Probability and Statistics	4	1	0	4
23	Web Development and Security	3	2	-	2	Web development	3	0	2	2																Web Security	04				Web Application Security	3	0	3	3

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#	EIU Program Course	CH	L	T	P	Sana'a University Course	CH	L	T	P	King Saud University Course	CH	L	T	P	University of Philadelphia Course	CH	L	T	P	University of Al Ain Course	CH	L	T	P	University of SLIIT Course	CH	L	T	P	Amrita Vishwa Vidyapeetham University Course	CH	L	T	P
24	Object-Oriented Programming	3	2	-	2	Object Oriented Programming	3	0	2	2						Object Oriented Programming	3				Object - Oriented Programming	3													
25	Operating Systems	3	2	-	2	Operating System Concepts	3	0	2	2	نظم التشغيل التطبيقية	3									Operating Systems	3				Secure Operating Systems	04				Operating Systems	3	0	0	3
26	Switching and Routing	3	2	-	2	Computer Networks (2)	3	2		2						Information Security Protocols	3									Systems and Network Programming	04								
27	Database Management and Security	3	2	-	2	Database Security	3	2		2						Database Administration Security	3									Database Management Systems for Security	04				Database Management System	3	0	3	3
28	Information Security Policies and Laws	2	2		-	Network Security	3	2		2											Law and Society	3				Governance and Cyber Law Clinic	04								
29	Scientific Research Fundamentals	2	2	-	-	Research Methods	3	0	0	3	البحث العلمي	3				Research Methods	3				Scientific Research Methodology	3				Preparation for the Professional World (Non-GPA)	04				Formal Methods for Security	2	0	0	2
30	Data structure and algorithms	3	2	-	2	Data Structure & Algorithms	2	0	2	3	هياكل البيانات	3				Data Structures	3				Data Structures and Algorithms	3				Foundations of Algorithms	04				Data Structures and Algorithms	3	0	0	3
31	Advance Programming	3	2	-	2	Programming language for Cybersecurity	3	2		2	البرمجة المرئية	4				Visual Programming	3														Advanced Programming	3	0	3	3
32	Cryptography	3	2	-	2	Cryptography	3	2		2	أساليب التشفير الرقمية	3				Cyber Crimes and Networks	3				Cryptography & Computer Network Security	3				Cryptography	04				Modern Cryptography	4	1	0	4
33	Wireless Networking and Security	3	2	-	2	Wireless Networks & Mobile Computing	3	0	2	2	أمن عمليات شبكات الحاسب	3				Wireless Computer Networks	3														Wireless Sensor Network Security	3	0	0	3
34	Mobile Applications Security	3	1	-	4	Mobile Applications	3	0	2	2						Mobile computing technology	3				Mobile Applications and Security	3				Mobile Security	04				Mobile and Wireless Security	3	0	0	3
35	System Analysis and design	3	2	2	-	System Analysis and Design	3	2	0	2	Data analysis skills	3				Systems Analysis and Design	3														Design and Analysis of Algorithms	3	0	0	3

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36	Secure Software Development	3	2	2	-	Network Security	3	0	2	2	تطوير وتحليل برمجيات آمنة	3				Networks Security	3				Secure programming	3				Secure Software Systems	04				System Security	3	0	0	3
37	Projects Management	2	2	-	-	IT project Management	3	0	0	3	إدارة مراكز تقنية المعلومات	3				Introduction to Project Management	3									Information Security Project	04								
38	Threats and Vulnerabilities Analysis	3	2	-	2	Cybersecurity Threats and Attack analysis	3	2		2	تحليل البرمجيات الخبيثة	3				Forensic and Investigations	3				Cybersecurity Law and Policy	3				Applied Information Assurance	04				Vulnerability Assessment and Penetration Testing	3	0	0	3
39	Digital Forensics	3	2	-	2	Digital Forensics	3	2		2	الاستجابة الإلكترونية والتحليل الجنائي بالحاسب	3									Computer Forensics	3				Security Economic Analysis	04				Cyber Forensics	3	0	3	3
40	Ethics and Compliance	2	2	-	-	Computer Ethics	3	2		2	أخلاقيات المهنة في تقنية المعلومات	2				Computing Ethics and technical writing	3				Computer ethics	3									Environmental Engineering and Management	3	0	0	3
41	Internship	3	-	-	-	Enterprise Systems	3	0	0	3	تدريب صيفي	1				Leadership and social responsibility	1				Internship	3									Environmental Management	2	0	0	2
42	Artificial Intelligence for Cybersecurity	3	2	-	2	AI Cybersecurity	3	2		2						Data science and artificial intelligence	3				Introduction to Artificial Intelligence	3				Machine Learning for Cyber Security	04				Artificial Intelligence and Neural Networks	4	0	3	4
43	Reverse Engineering and System Management	3	2	-	2	Reverse Engineering	3	2		2	الأجهزة وبرمجيات الهندسة العكسية	3									Ethical Hacking	3									Machine Learning	3	0	3	3
44	Ethical hacking and Penetration Testing	3	2	-	2	Ethical Hacking and Penetration Testing	3	2		2						Ethical Hacking	3				Ethical Awareness	3				Offensive Hacking: Tactical and Strategic	04				Secure Software Engineering	3	0	3	3
45	Elective 1	3	2	-	2	Elective (1)	3	2		2																					Amrita Value Program I	1	0	0	1
46	Graduation Project1	3	-	-	-	Graduation Project (1)	3	2		2	مشروع تخرج 1)(	3				Research Project 1	1				Capstone Project I	1				Research Project	16								

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#	EIU Program					Sana'a University					King Saud University					University of Philadelphia					University of Al Ain					University of SLIIT					Amrita Vishwa Vidyapeetham University				
	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P
47	IoT Security	3	2		2	IoT Security	3	2		2											Emerging Technologies IoT and Cloud	3									Distributed Systems and Cloud Computing	3	0	3	3
48	Personal Privacy and Social Engineering	3	3	-	-	Software engineering	3	2		2	الحوكمة والمجتمع في العصر السيبراني	3				Social Engineering	3				Foundation of software engineering	3				Secure Software Engineering	04				Principles of Engineering	3	0	3	3
49	Elective 2	3	2	-	2	Elective (2)	3	2		2											Enterprise Standards for Information Security	02				Classical Cryptography	2	0	0	2
50	Graduation Project 2	3	1		4	Graduation Project (2)	3	2		2	مشروع تخرج 2)(	3				Research Project 2	2				Capstone Project II	2									Project – Phase – 2	10	0	30	10
51																																			
52	Selected topics in Cybersecurity	3	2		2	Cybersecurity Governance, policy and Privacy	3	2		2	الأمن السيبراني والحرب الإلكترونية	3				Special topics in Information & Cyber Security	3				Cyber Warfare	3									Humanities Elective	2	0	0	2
53	Information Hiding Techniques	3	2		2	Information Security management system	3	2		2						Intrusion Detection and Prevention Systems	3				Secure Systems Architectures and Mechanisms	3				Network Security	04				Program Obfuscation	3	0	0	3
54	Risk Management and analysis	3	2	-	2	Security Risk management	3	2		2	إدارة المخاطر الأمنية	3				Information Security Risks Management	3				Risk Assessment & Management	3				Information Security Risk Management	02								
55	Mobile Forensics	3	2		2	Mobile Application programming	3	2		2						Mobile Devices Security	3									Cyber Forensics and Incident Response	04				Internet of Things	3	0	3	3
56	System Components Security and Testing	3	2	-	2	Introduction to Linux Operating System Security	3	2		2	أمن نظم التشغيل	3				Linux Operating Systems	3				Big Data from Social Networks	3				Hardware Security	04				Formal Methods for Security	2	0	0	2
57	Blockchain security	3	2		2	Blockchain Technologies and applications	3	2		2						CryptoCurrency and	3														Blockchain Technology	3	0	3	3

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#	EIU Program Course	CH	L	T	P	Sana'a University Course	C H	L	T	P	King Saud University Course	CH	L	T	P	University of Philadelphia Course	C H	L	T	P	University of Al Ain Course	C H	L	T	P	University of SLIIT Course	C H	L	T	P	Amrita Vishwa Vidyapeetham University Course	C H	L	T	P
																BlockChain Technology																		
58	Biometric Authentication	3	2		2																										Biometrics and Security	3	0	0	3
59											فيزياء عامة	4				Legal Culture	3				Physics I	3				Data and Operating Systems Security	04				Engineering Physics	3	1	0	3
60											انتظام كلي	3				Life Skills	1				Physical Education & Health	3				Employability Skills Development – Seminar (Non GPA)	01								
61											نتظام كلي- برسوم	3				Leadership and innovation	1				Fundamentals of Innovation and Entrepreneurship	3				Industry Placement (Non-GPA)	08				User Interface Design	2	0	3	2
62											مهارات الكتابة	2				Thinking skill	3				Thinking Skills	3				Employability Skills Development – Seminar (Non GPA)	01				Problem Solving and Algorithmic Thinking	4	1	3	4
63											مهارات الكتابة	2				Economic culture	3														Optimization Techniques	4	1	0	4
64											التصميم المنطقي	3				Digital culture	3				Digital Logic Design	3									Computer Hardware and System Essentials	3	0	3	3
65											تراسل البيانات والاتصالات الرقمية	3																			Hardware Security	3	0	0	3
66											معمل شبكات الحاسب	2																							
67											أمن الشبكات	3																							
68											معمل أمن الشبكات	2																							
											نظم التضمين والمادية السيبرانية																				Multimedia Processing	3	0	3	3

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#	EIU Program					Sana'a University					King Saud University					University of Philadelphia					University of Al Ain					University of SLIIT					Amrita Vishwa Vidyapeetham University				
	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P	Course	CH	L	T	P
																)1(Thought and Human Civilization	3																		
																Health Education	3																		
																Human Rights	3																		
																development and environment	3				Environmental Awareness	3				Information Warfare	04								
																Programming Language in Information Security	3																		
																Practical Training	3																		
																Network Operating Systems	3																		
																Networks Surveillance and Documentations	3																		
																Differentiation and Integration(1)	3				Intrusion Analysis and Incident Management	3													
																Linear Algebra (1)	3				Linear Algebra	3									Linear Algebra	4	1	0	4
																Algorithms	3																		
																					Science and Life	3												
																					Self-Assessment	3												
																					Introduction to Time Management	3												
																					Leadership and Teamwork	3												

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#	EIU Program					Sana'a University					King Saud University					University of Philadelphia					University of Al Ain					University of SLIIT					Amrita Vishwa Vidyapeetham University				
	Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours				Course	Course Hours			
		CH	L	T	P		CH	L	T	P		CH	L	T	P		CH	L	T	P		CH	L	T	P		CH	L	T	P		CH	L	T	P
																					Introduction to Numerical Methods	3									Number Theory and Algebra	3	0	0	3
																					Introduction to Psychology	3													
																					Discrete Structures	3				Discrete Mathematics	04								
																															Digital Signal Processing	3	1	0	3
																															Soft Skills – 1	2	0	3	2
																															Disaster Management	P/F			P/F
																															Digital Communication	3	0	0	3
																															Secure Coding	3	0	0	3
																															Automata Theory and Compiler Design	3	0	3	3
																															Android Application Development	1	0	3	1

Annex- 5, Coding System

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Annex- 6, Matrix of Mapping Program PILO's with Courses

I =Introduced; P=Practiced; M/A=Mastered/Advanced

#	Course Code	Course Title	A. Knowledge & Understanding			B. Intellectual Skills		C. Practical Skills				D. Transferable Skills			
			A1	A2	A3	B1	B2	C1	C2	C3	C4	D1	D2	D3	D4
1	UNI101	Islamic Culture													I
2	UNI103	Arabic Language I		I								I		I	
3	UNI104	English Language I		I								I		I	
4	UNI107	Arabic Israeli Conflict			I										
5	UNI100	Introduction to Computer	I	I			I							I	I
6	EIT111	Mathematics I	I					I			I		I	I	
7	UNI102	National Culture			I							I			I
8	UNI103	Arabic Language 2		I								I		I	
9	UNI106	English Language 2		I								I		I	
10	EIT112	Mathematics 2	I			I			I		I		I	I	
11	CYS120	Introduction to Cybersecurity	I		I		I	I			I		I		I
12	AI130	Computer Programming1	I	I			I						I	I	I
13	EIT114	Discrete Mathematic	I			I			I				I	I	I
14	EIT213	Communication skills			I							I	I		
15	AI231	Computer Programming 2	P	P			P	P	P				P	P	P
16	AI223	Database systems		P	P	P	P	P			P		P	P	P
17	AI236	Web Technology Fundamentals	P	P			P	P	P				P	P	P
18	CYS251	Computer Networks	I	I			I	I		I	I		I		I

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#	Course Code	Course Title	A. Knowledge & Understanding			B. Intellectual Skills		C. Practical Skills				D. Transferable Skills			
			A1	A2	A3	B1	B2	C1	C2	C3	C4	D1	D2	D3	D4
19	CYS261	Information System Security Management	P		P		P	P			P	P		P	P
20	AI241	Computer Organization and Architecture	P		P	P	P	P	P	P			P	P	
21	EIT212	Technical English		M	M		M					M			M
22	EIT211	Probability and Statistics	M			M		M					M	M	M
23	CYS260	Web Development and Security		M	M		M		M	M	M		M	M	M
24	AI230	Object-Oriented Programming		M	M		M	M	M		M		M	M	M
25	AI240	Operating Systems	P		P	P	P	P	P	P			P	P	P
26	CYS250	Switching and Routing	P	P		P	p		P	P	P		P	P	P
27	CYS262	Database Management and Security		M	M	M	M	M		M	M		M	M	M
28	CYS264	Information Security Policies and Laws	P		P		P	P	P		P		P	P	P
29	EIT312	Scientific Research Fundamentals			P	P		P			P	P	P	P	P
30	CYS331	Data structure and algorithms	M	M			M	M		M	M		M	M	M
31	CYS333	Advance Programming		M	M	M	M		M	M	M		M	M	M
32	CYS361	Cryptography	M		M	M	M	M		M	M		M	M	
33	CYS351	Wireless Networking and Security		M	M	M	M		M	M	M		M	M	M
34	CYS335	Mobile Applications Security		M	M		M	M		M	M		M	M	M
35	CYS340	System Analysis and design		M	M		M	M		M	M		M	M	M
36	CYS332	Secure Software Development		M	M	M	M		M		M	M		M	M
37	EIT311	Projects Management		P	P		P	P	P		P		P	P	P
38	CYS363	Threats and Vulnerabilities Analysis	M		M	M	M	M	M	M			M	M	M

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#	Course Code	Course Title	Program Intended Learning Outcomes (PILOs)												
			A. Knowledge & Understanding			B. Intellectual Skills		C. Practical Skills				D. Transferable Skills			
			A1	A2	A3	B1	B2	C1	C2	C3	C4	D1	D2	D3	D4
39	CYS362	Digital Forensics		M	M	M	M		M	M	M		M	M	M
40	CYS364	Ethics and Compliance			M	M	M	M			M	M	M	M	M
41	CYS380	Internship		M	M		M		M	M	M	M	M	M	M
42	CYS461	Artificial Intelligence for Cybersecurity		M	M		M	M	M				M	M	M
43	CYS463	Reverse Engineering and System Management		M	M	M	M		M	M	M	M		M	M
44	CYS465	Ethical hacking and Penetration Testing	M	M		M	M		M		M		M	M	M
45	CYS491	Elective 1	M		M	M		M	M	M			M	M	M
46	CYS481	Graduation Project1		M	M	M	M	M		M	M	M	M	M	M
47	CYS460	IoT Security		M	M	M			M	M	M		M	M	M
48	CYS462	Personal Privacy and Social Engineering		M	M	M			M	M			M	M	M
49	CYS492	Elective 2		M	M	M	M	M	M	M			M	M	M
50	CYS482	Graduation Project 2		M	M	M	M	M	M	M		M	M	M	M

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Annex- 7, CVs for the Preparation Committee

Dr. Malek Nasser Ali Al-gabri, Associated Professor of Computer Science & Technology, College of Computer and Information Technology, Computer Science Department, Sana'a University, Yemen.
Mobile Number : +967-777662909.
Email: malekye@su.edu.ye

Dr. Gamil R. S. Qaid , Faculty of Computer Science and Engineering, Computer Engineering Department, Hodeida University, Yemen.
Mobile Number : +967773514388,
Email: jrsk80@yahoo.com

Dr. Nabil Mudhsh, College of Computer and Information Technology, Computer Science Department, Sana'a University, Yemen.
Mobile Number : +967- 777705977
Email: nabil11215@gmail.com

Attached separately.

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