University of Warith AL-Anbiaa

جامعة وارث الأنبياء

First Batch: Bachelor's degree (B.Sc.) – Information Technology

الدفعة الأولى : بكالوريوس علوم - تكنولوجيا المعلومات.

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1. Overview

Computer science has been a popular specialization in Iraqi universities since the 1980s. Over the past four decades, it has rapidly developed and diversified into five main disciplines: computer science, computer engineering, software engineering, information systems, and information technology. Although these disciplines share a common foundation in computing, they differ in their focus on the study of details. Computer science is primarily focused on programming principles, databases, computational theory, algorithms, artificial intelligence, data structuring, and operating systems. It also covers applied aspects such as robotics, computer vision, and image processing. Information technology, on the other hand, is more focused on applied aspects such as computer networks, cloud computing, cybersecurity, data centers, and web applications. It also covers theoretical aspects such as programming principles, databases, and data structures. In 2020, the Foundation added two new departments, Cybersecurity and Data Science, to the existing five. Most public and private organizations have an independent department of information technology that is responsible for managing and applying information technology in the organization. This includes managing computer networks, servers, e-mail services, and protecting the organization from cyber threats.

In addition to managing information systems and cloud services, organizations require an IT department to manage their technological needs. The field of information technology is a global specialization with a high demand in the labor market and good salaries. This demand increased after the COVID-19 pandemic, as institutions were forced to close their headquarters and employees worked from home. This transformation compelled institutions and companies to adopt information systems to manage their work. The Department of Information Technology at Warith Al-Anbiya University was established as a new department within the Faculty of Science to meet the need of government and private institutions for this specialization. The curriculum is based on modern international curricula developed by IEEE/ACM and experts from IT and network manufacturers. The graduate of the IT department must possess technical skills such as hands-on experience and soft skills such as time management, teamwork, communication, project management, and technical writing. Therefore, the curriculum should support and develop these skills. There are several job titles that an IT graduate can fill.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
IT101	Information Technology Fundamentals	4	1
Class (hr/w)	**Lect/Lab./Prac./Tutor/Semn (hr/w).**	**SSWL (hr/sem)**	**USSWL (hr/sem)**
3		50	4
Description			

This course is intended to be at the introductory level and to provide foundation skills for subsequent courses. It provides an overview of the discipline of IT, describes how it relates to other computing disciplines, and begins to instill an IT mindset. The goal is to help students understand the diverse contexts in which IT is used and the challenges inherent in the diffusion of innovative technology

Module 2

Code	Course/Module Title	ECTS	Semester
IT103	Computer Organization	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor/Semn (hr/w).**	**SSWL (hr/sem)**	USSWL (hr/sem)
2	2	65	6
Description			

This module offers a deep dive into the world of computers and computing systems. Starting with the fundamentals of computer types, then exploration of hardware components such as the input/output unit, memory unit, CPU, motherboard, expansion cards, and power supply. The module then transitions into specific input and output devices, outlining their various types and functions. Following this, the module takes a closer look at memory, from ROM and RAM to virtual memory, CPU cache, and the hierarchy of memory. The next section dives into the various storage options like HDDs, SSDs, and the concept of disk partitioning. It elaborates on file systems and their typical tasks, creating a solid foundation in understanding data storage. The module also covers operating systems, their types, functions, and provides historical insights into UNIX, MacOS, Linux, and Microsoft Windows.

Module 3

Code	Course/Module Title	ECTS	Semester
IT105	Calculus I	5	1
Class (hr/w)	**Lect/Lab./Prac./Tutor/Semn (hr/w).**	**SSWL (hr/sem)**	**USSWL (hr/sem)**
3		50	5
Description			
The aim of the course is to study to the functions, Continuity, limits, and the derivative for algebraic, trigonometric, logarithmic, exponential, and inverse functions, and ordinary differential equations, and their applications.			

Module 4

Code	Course/Module Title	ECTS	Semester
IT104	Programming Fundamentals I	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor/Semn (hr/w).**	**SSWL (hr/sem)**	**USSWL (hr/sem)**
2	3	80	7
Description			
This course introduces students to structured programming techniques. Topics include different control statements (sequence, selection, and repetition), functions, and fundamental data types. Upon successful completion of the course, students will solve computer problems by using structured programming techniques and adequate tools (text editor, compiler, and debugger) Scope: 1. Skills and fundamental programming concepts, data structures, and algorithmic processes 2. Programming strategies and practices for efficient problem solving 3. Programming paradigms to solve a variety of programming problems Competencies: A. Use multiple levels of abstraction and select appropriate data structures to create a new program that is socially relevant and requires teamwork. (Program development) B. Evaluate how to write a program in terms of program style, intended behavior on specific inputs, correctness of program components, and descriptions of program functionality C. Develop algorithms to solve a computational problem and explain how programs implement algorithms in terms of instruction processing, program execution, and running processes. Collaborate in the creation of an interesting and relevant app (mobile or web) based on user experience design, functionality, and security analysis and build the app's program using standard libraries, unit testing tools, and collaborative version control.			

Module 5

Code	Course/Module Title	ECTS	Semester
IT102	Digital Logic	6	1
Class (hr/w)	**Lect/Lab./Prac./Tutor/Semn (hr/w).**	**SSWL (hr/sem)**	**USSWL (hr/sem)**
2	2	65	6
Description			
This course focuses on the fundamental constructs and concepts underlying computer hardware and software which includes number systems, binary arithmetic, codes, Boolean algebra, gates, Boolean expressions, Boolean switching function synthesis, iterative arrays, sequential machines, state minimization, flip/flops, sequential circuits, simple processors.			

Module 6

Code	Course/Module Title	ECTS	Semester
UOWA103	Arabic Language	2	1
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	1
Description			
This section includes a description of the module, 100-150 words			

Module 7

Code	Course/Module Title	ECTS	Semester
IT112	System Administration	7	2
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	8
Description			

This module offers a deep dive into the world of computers and computing systems. Starting with the command-line interfaces, comparing them with GUI, and dives into programming languages and their core elements. The module concludes with a discussion on open-source software and software licenses, focusing on proprietary software licensing models, software cracking, and piracy. It further covers critical topics like data backup and encryption, offering a thorough understanding of data protection and security. The last section aims to introduce the concept of data centers, completing a holistic understanding of computer systems.

Module 8

Code	Course/Module Title	ECTS	Semester
IT205	Calculus II	5	2
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
3		50	5
Description			

The aim of the course is to provide a study of the methods of the definite integral, techniques of integration and their applications. find derivatives and their applications and to know the methods of solving regular

Module 9

Code	Course/Module Title	ECTS	Semester
IT204	Programming Fundamentals II	7	2
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	3	80	7
Description			

This course introduces students to structured programming techniques. Topics include different control statements (sequence, selection, and repetition), functions, and fundamental data types. Upon successful completion of the course, students will solve computer problems by using structured programming techniques and adequate tools (text editor, compiler, and debugger) Scope: 1. Skills and fundamental programming concepts, data structures, and algorithmic processes 2. Programming strategies and practices for efficient problem solving 3. Programming paradigms to solve a variety of programming problems Competencies: A. Use multiple levels of abstraction and select appropriate data structures to create a new program that is socially relevant and requires teamwork. (Program development) B. Evaluate how to write a program in terms of program style, intended behavior on specific inputs, correctness of program components, and descriptions of program functionality. C. Develop algorithms to solve a computational problem and explain how programs implement algorithms in terms of instruction processing, program execution, and running processes. D. Collaborate in the creation of an interesting and relevant app (mobile or web) based on user experience design, functionality, and security analysis and build the app's program using standard libraries, unit testing tools, and collaborative version control.

Module 10

Code	Course/Module Title	ECTS	Semester
IT206	Discrete Structures	6	2
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
3		50	7
Description			
This course will introduce the student to a body of mathematical concepts essential for proficiency in some of the higher-level computer science courses. Topics include Set theory, Functions and relations, Propositional and predicate logic, Proof techniques, Recursive Algorithms, Elementary combinatorics and Counting methods, Graph theory, and Discrete probability.			

Module 11

Code	Course/Module Title	ECTS	Semester
UOWA102	English Language I	2	2
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	3
Description			
This section includes a description of the module, 100-150 words			

Module 12

Code	Course/Module Title	ECTS	Semester
UOWA203	Human Rights & Democracy	2	2
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	1
Description			
This section includes a description of the module, 100-150 words			

Module 13

Code	Course/Module Title	ECTS	Semester
IT242	Computer Networks	6	3
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		65	6
Description			
This course explores the fundamental concepts, principles, and protocols that underpin modern network communication. Students will learn about network components, topologies, and configurations, as well as the functionalities and protocols of the application and transport layers. Through a combination of theoretical knowledge and hands-on practical exercises, students will develop the necessary skills to analyze, design, implement, and troubleshoot computer networks. They will gain proficiency in configuring network protocols, programming network applications, and ensuring reliable data delivery. By the end of the course, students will be equipped with the knowledge and skills required to pursue careers in network administration, network engineering, or related fields. They will possess a solid foundation in computer networks, enabling them to design efficient networks, diagnose network issues, and implement secure network solutions			

Module 14

Code	Course/Module Title	ECTS	Semester
IT203	Object Oriented Programming I	6	3
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	3	80	5
Description			

This course extends the student's basic procedural design and programming knowledge and skills into the object-oriented paradigm and builds on previous experience with interpreted languages to introduce compiled languages. In addition to further shaping a solid development methodology, the course prepares students for continued investigation into advanced programming topics.

Module 15

Code	Course/Module Title	ECTS	Semester
IT231	Principles of Database Systems	6	3
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course will introduce the basic concepts in database systems and architectures, including data models, database design, database programming, and database implementation. It emphasizes topics in ER model and relational databases, including relational data model, relational algebra and calculus, SQL, functional dependency and normalization, and database design process.

Module 16

Code	Course/Module Title	ECTS	Semester
IT202	Microprocessors	6	3
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course the student will understand the main components and working principles of the 8086 processor. Understanding of basic computer architecture. Understanding memory organization and interaction with memory. Handling I/O units. The course analyzes the several components of a computing system: from the microprocessor internal architecture, up to system bus for peripheral devices management. The course also covers programming at assembly level.

Module 17

Code	Course/Module Title	ECTS	Semester
IT201	Probability and Statistics	4	3
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
3		50	2
Description			

This course will provide students with a basic knowledge of mathematical probability theory and the techniques of statistical inference that are used for analyzing data. Also, this module will provide students a foundation for further modules in statistics and applied probability.

Module 18

Code	Course/Module Title	ECTS	Semester
UOWA204	Professional Ethics	2	3
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	3
Description			

This module aims to provide students with a comprehensive understanding of computer ethics and the social and ethical considerations associated with the world of information technology. It focuses on developing the necessary skills to analyze problems, research current ethical issues in information systems and the Internet, and apply ethical principles and best practices in the field of information technology

Module 19

Code	Course/Module Title	ECTS	Semester
IT243	Network Routing and Switching	6	4
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

The module begins by introducing the fundamentals of networks and gradually progresses to cover the network and link layers. Students will learn about routing protocols, network addressing, switching concepts, and network troubleshooting. Through a combination of theoretical knowledge and practical exercises, students will develop the skills necessary to design, configure, and troubleshoot networks.

Module 20

Code	Course/Module Title	ECTS	Semester
IT209	Object Oriented Programming II	6	4
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	3	80	5
Description			
This course extends the student's basic procedural design and programming knowledge into the object-oriented paradigm. The student will be expected to learn and apply the basic concepts of object-oriented design and programming, i.e., abstraction, inheritance, and polymorphism			

Module 21

Code	Course/Module Title	ECTS	Semester
IT232	Database Systems: Design and Development	6	4
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			
Approaches to database application development; database application analysis and design methodology; development of database applications with typical tools such as: MS SQL Server, JDBC, and Eclipse.			

Module 22

Code	Course/Module Title	ECTS	Semester
IT262	Data Structure	6	4
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course provides the students with an understanding of the concepts on data representation and organization used in development of computer applications. The topics to be covered include: 1) Abstraction and encapsulation through Abstract Data Types (ADT); 2) Knowledge of basic and advanced data structures such as Linked Lists, Stacks, Queues, Trees, and Graphs; 3) Knowledge of basic algorithmic analysis: Asymptotic analysis of worst and average complexity bounds; identifying differences among best, average, and worst-case behaviors; big "O" notation; 4) Various sorting and searching algorithms are taught to illustrate the above concepts.

Module 23

Code	Course/Module Title	ECTS	Semester
IT272	Project Management Principles	3	4
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	3
Description			

This course discusses the processes, methods, techniques, and tools that organizations use to manage their information systems projects. The course covers a systematic methodology for initiating, planning, executing, controlling, and closing projects. This course assumes that project management in the modern organization is a complex team-based activity, where various types of technologies (including project management software as well as software to support group collaboration) are an inherent part of the project management process

Module 24

Code	Course/Module Title	ECTS	Semester
UOWA202	English Language II	3	4
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	3
Description			

This section includes a description of the module, 100-150 words

Module 25

Code	Course/Module Title	ECTS	Semester
IT321	Information Technology Governance	3	5
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	3
Description			

The course covers the IT governance framework and roadmap for planning and implementing a successful IT governance process and drills down into its major components in more detail. Key topics covered are executive view of IT governance, overview of Industry Best Practice Standards, Model and Guidelines covering some aspect of IT governance. In addition, the course includes principles of Business/IT Alignment Excellence, principles of Program/Project Management Excellence, principles of IT Service Management and Delivery Excellence and principles of Vendor Management and Outsourcing Excellence. Finally, it presents some lessons learned and critical success factors and some select case studies.

Module 26

Code	Course/Module Title	ECTS	Semester
IT333	DBMS Administration	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course introduces a variety of database administration topics, including capacity planning, database management system (DBMS) architecture, performance tuning, backup, recovery and disaster planning, archiving, reorganization and defragmentation.

Module 27

Code	Course/Module Title	ECTS	Semester
IT381	User Experience Design	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course introduces the field of human-computer interaction (HCI), an interdisciplinary field that integrates cognitive psychology, design, computer science and others. This course will examine human performance, components of technology, methods and techniques used in design and evaluation of IT. Societal impacts of HCI such as accessibility; introduction and evaluation of user-centered design methods; introduction students to the contemporary technologies used in empirical evaluation methods.

Module 28

Code	Course/Module Title	ECTS	Semester
IT331	Operating System	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			
This course is about the basics of computer operating systems, including configuration, file systems, security, administration, interfacing, multitasking, and performance analysis. Parallelism or concurrency aspects explained using the concepts of process management, synchronization, deadlocks, job and process scheduling.			

Module 29

Code	Course/Module Title	ECTS	Semester
IT341	Web Design and programming	6	5
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			
This course aims to provide students with a comprehensive understanding of key web development concepts, tools, and techniques. Students will learn front-end skills, including HTML, CSS, and JavaScript, to design visually appealing and interactive web interfaces. They will also gain knowledge about essential web technologies such as TCP/IP, sessions, and cookies.			

Module 30

Code	Course/Module Title	ECTS	Semester
IT301	Communication skills	3	5
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	3
Description			

This course aims to introduce students to communication skills which is the ability to convey information and ideas to another effectively and efficiently. Good verbal, nonverbal, and written communication skills will help facilitate the sharing of information between people within a company for its commercial benefit.

Module 31

Code	Course/Module Title	ECTS	Semester
IT372	Advanced Computer Architecture	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
3		50	5
Description			

This course introduces the advanced concepts of computer architecture. Knowing the student, the basics of building a computer, building microprocessors, interconnecting and organizing the basic units that make up a computer system, and how the internal devices interact with each other and with input and output devices. Evaluate different memory handling mechanism, memory-hierarchy design, storage systems.

Module 32

Code	Course/Module Title	ECTS	Semester
IT362	Software Engineering	6	6
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
3	2	65	6
Description			
This course aims to learn students that apply engineering principles to software development to improve quality, time, and budget efficiency, along with the assurance of structured testing.			

Module 33

Code	Course/Module Title	ECTS	Semester
IT332	Linux Operating System	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	4
Description			
This course the students will understand the rationale behind the current design and implementation Linux Operating system and provides an introduction to Kernel Driver for the Linux operating system. They will learn about Linux shell scripting and System Programming concepts and the basics of File IO for Linux			

Module 34

Code	Course/Module Title	ECTS	Semester
IT342	Web Application Development	5	6
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	4
Description			

This course aims to provide students with a comprehensive understanding of key web development concepts, tools, and techniques, with a focus on utilizing PHP and integrating it with the previously learned skills in HTML, CSS, and JavaScript. The module aims to equip students with the necessary knowledge and skills to design and build dynamic and interactive web applications.

Module 35

Code	Course/Module Title	ECTS	Semester
UOWA302	English Language III	3	6
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	3
Description			

This section includes a description of the module, 100-150 words

Module 36

Code	Course/Module Title	ECTS	Semester
IT381	Cybersecurity Principles	6	6
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course introduces the concept of Cybersecurity and understanding the 9 cybersecurity principles, understanding problems of cyberspace, provide solutions to real-world problems by applying security management models and practices to security programs, implement specialist knowledge and skills to deal with cyber incident and examine sources of cyber security incident use cases, and how these can be applied towards improving organizational response and recovery.

Module 37

Code	Course/Module Title	ECTS	Semester
IT401	Information Security Technologies	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course introduces the concept of information security, it aims to provide students with a basic understanding of what information security is and why it is important in today's digital age and teach them how to recognize common security risks such as malware, phishing attacks, and data breaches. learn how to create secure passwords, how to store them safely, and why it is crucial to avoid sharing passwords with others.

Module 38

Code	Course/Module Title	ECTS	Semester
IT444	Wireless Networks	3	7
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
3		50	2
Description			

The Wireless Networks module provides students with a comprehensive understanding of wireless communications and networks. Through a combination of theoretical concepts and practical applications, students will explore the history, evolution, and compatibility of wireless standards. They will analyze special problems related to wireless and mobile computing, including issues such as radio frequency interference and power consumption optimization. The module will contrast wireless LANs and cellular networks, examining their architectures, coverage characteristics, and mobility support. Students will gain insight into the differences between physical and wireless networking, as well as explore various solutions for communications at each network layer. They will learn about protocols used in wireless communications and perform simulations to understand the behavior of wireless networks. Security issues and countermeasures in wireless networks, as well as performance optimization techniques, will also be covered. By the end of the module, students will be equipped to address the challenges and design efficient wireless networks in real-world scenarios.

Module 39

Code	Course/Module Title	ECTS	Semester
IT421	Foundation of Cloud Computing	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

1. Understand Cloud Computing: Explain the key concepts, models, and architectures of cloud computing.

2. Manage Cloud Environments: Set up and manage a cloud environment, including

infrastructure, data, and virtualization.

3. Implement Security Measures: Apply appropriate security measures to protect data and applications in the cloud.

4. Develop Cloud Applications: Develop cloud-native applications and use cloud APIs effectively.

5. Optimize Cloud Services: Scale cloud services and optimize their performance to meet user and application demands

Module 40

Code	Course/Module Title	ECTS	Semester
IT431	Mobile Applications	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course aims to provide students with a comprehensive understanding of mobile application development. Students will learn about the history of mobile development, various mobile platforms, architectures, multiplatform development, server-side programming, performance optimization, user interface design, camera and document interactions, and 2D graphics and animation

Module 41

Code	Course/Module Title	ECTS	Semester
IT461	Data Storage Engineering	6	7
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

The Data Storage Engineering module provides students with a comprehensive understanding of various data storage technologies and architectures. Through a combination of theoretical lectures and hands-on lab sessions, students will explore the principles of operation, performance considerations, and management strategies of different storage systems, including Hard Disk Drives (HDDs), Solid State Drives (SSDs), Network-Attached Storage (NAS), Storage Area Networks (SAN), and cloud storage. The module covers topics such as RAID configurations, data backup and recovery, data deduplication and compression, storage virtualization, data storage security, and emerging trends in data storage technologies. By the end of the module, students will possess the knowledge and practical skills required to design, implement, and manage efficient and secure data storage solutions in various IT environments.

Module 42

Code	Course/Module Title	ECTS	Semester
IT441	Graduation Project I	3	7
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
	4	62	1
Description			

The course aims to introduce the required techniques for implementing systems, writing technical reports and the skills for presenting the work for audiences. This course focuses on topics related to the field of information technology. The course will also provide guidance to the students in selecting their projects and understanding the research process and introduce the tools needed to support implementing the system and writing its proposal and report. The student should get the supervisor approval for his proposal during this course.

Module 43

Code	Course/Module Title	ECTS	Semester
IT452	Cyber-Attacks and Detection	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

This course aims to provide students with a comprehensive understanding of cyberattacks and detection mechanisms. Students will learn the roles of prevention, deterrence, and detection in cybersecurity, as well as gain practical skills in recognizing and analyzing various cyberattacks. They will also explore the limitations and effectiveness of signature-based and behavioral-based anti-virus technology and understand the differences between host-based and network-based intrusion detection systems. Furthermore, students will design rules for a network-based intrusion detection system to protect against known attacks and explore the use of deception by malware to evade security mechanisms.

Module 44

Code	Course/Module Title	ECTS	Semester
IT445	Network Design	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

The Network Design course is designed to provide undergraduate students in the IT department with a comprehensive understanding of network design principles, methodologies, and best practices. Students will learn to analyze network requirements, plan network topologies, select appropriate network technologies, and design reliable, secure, and scalable networks. Through a combination of theoretical concepts, practical assignments, and real-world case studies, students will develop the skills necessary to design effective computer networks.

Module 45

Code	Course/Module Title	ECTS	Semester
IT422	Cloud Computing Emerging Technologies	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

1. Understand Advanced Cloud Concepts: Explain advanced concepts in cloud computing,

including complex architectures, big data analytics, advanced security, and legal and regulatory aspects.

2. Apply Advanced Practical Skills: Apply advanced practical skills in cloud computing, including building complex applications, using automation and orchestration tools, and designing and managing cloud networks.

3. Understand Emerging Trends: Understand and apply emerging trends in cloud computing, such as IoT, edge computing, AI, machine learning, and blockchain.

4. Handle Real-World Scenarios: Handle real-world scenarios in cloud computing, such as cloud governance, compliance, disaster recovery, business continuity, and cloud service brokerage.

5. Learn Independently: Demonstrate the ability to learn independently and stay updated with the latest developments in cloud computing

Module 46

Code	Course/Module Title	ECTS	Semester
IT472	Internet of Things	6	8
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2	2	65	6
Description			

Network structure of IoT; software and hardware platform and system composition of IoT; cloud computing; node sensing and identification technologies including the basic principle of radio frequency identification; RFID system and its typical application; sensor and detection technologies.

Module 47

Code	Course/Module Title	ECTS	Semester
IT492	Graduation Project II	3	8
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
	4	62	1
Description			

This a continuation of the graduation project started in IT 441. The focus in this part will be on low-level design, implementation, testing and quality assurance as well as management of the project. The outcome of this project must be a significant information technology product, employing knowledge gained from courses through the curriculum. Students must deliver the code, a final report, and must present the demonstration of their work.

Module 48

Code	Course/Module Title	ECTS	Semester
UOWA402	English Language III	3	8
Class (hr/w)	Lect/Lab./Prac./Tutor/Semn (hr/w).	SSWL (hr/sem)	USSWL (hr/sem)
2		35	3
Description			

This section includes a description of the module, 100-150 words

3. Contact

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