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Al-Ahliyya Amman University
Faculty of Information Technology

Laboratories Handbook

Academic Year 2025/2026

Contents

Dean’s Foreword

The Faculty of Information Technology at Al-Ahliyya Amman University recognizes practical education as a fundamental pillar of academic quality and professional preparation. In computing and technology disciplines, laboratories are not supplementary facilities; rather, they are essential learning environments in which concepts are tested, skills are developed, and innovation is encouraged.

The laboratories of the Faculty have been established and developed to support a wide spectrum of academic and technical activities, including programming, software development, data management, computer networks, cybersecurity, artificial intelligence, data science, robotics, embedded systems, and emerging technologies. Through these laboratories, students are provided with opportunities to engage directly with modern tools, technical platforms, and applied problem-solving environments that strengthen their readiness for professional practice.

This handbook has been prepared as a formal reference document to present the Faculty’s laboratory resources in a clear, structured, and professional manner. It reflects the Faculty’s commitment to documentation, quality assurance, institutional development, and the continuous improvement of the learning environment. It is our hope that this handbook will serve as a useful guide for students, academic staff, administrative units, and all those concerned with the effective use and future development of the Faculty’s laboratory facilities.

The Faculty remains committed to enhancing its laboratories in line with academic priorities, technological advancement, and the changing expectations of higher education and the labor market.

Preface

The Faculty of Information Technology at Al-Ahliyya Amman University is committed to providing a modern, practice-oriented, and academically supportive learning environment. Laboratory education is central to this commitment, as it enables students to translate theoretical understanding into applied knowledge through experimentation, implementation, simulation, analysis, and technical problem solving.

This handbook has been developed to serve as an official introductory and organizational reference for the laboratories of the Faculty. It provides an overview of the laboratories, their technical infrastructure, major equipment, installed software, specialized resources, and the academic domains they support. It also outlines the general policies and safety principles that govern the proper and responsible use of these facilities.

The handbook is intended for students, faculty members, laboratory supervisors, technical staff, academic reviewers, and institutional stakeholders who require a clear understanding of the Faculty’s laboratory resources and their contribution to the teaching and learning process.

Introduction

The laboratories of the Faculty of Information Technology constitute an essential component of the educational environment at Al-Ahliyya Amman University. They provide students with opportunities to apply theoretical knowledge in practical contexts and to develop direct experience with contemporary software platforms, computing tools, instructional technologies, and specialized technical equipment relevant to their fields of study.

The Faculty's laboratories support undergraduate teaching, practical training, student projects, graduation work, selected workshops, and development-oriented academic activities. The available facilities include both general-purpose computing laboratories and specialized environments designed to support advanced and emerging areas such as networks and cybersecurity, artificial intelligence, data science, robotics, embedded systems, and design-oriented applications.

The diversity of these laboratories reflects the Faculty's emphasis on applied learning, technical competence, and academic relevance. Accordingly, this handbook documents the laboratories not merely as physical spaces, but as educational resources that contribute directly to student learning outcomes and to the broader mission of the Faculty.

Purpose of the Handbook

This handbook has been prepared to achieve the following purposes:

- To present a clear and formal overview of the laboratories of the Faculty of Information Technology;
- To document the major hardware, software, and specialized resources available in each laboratory;
- To identify the academic and technical areas supported by the laboratory environment;
- To provide a consistent institutional reference for academic, administrative, and quality assurance use;
- To clarify the general principles governing laboratory use, safety, and resource protection; and
- To support future planning, development, and presentation of the Faculty's infrastructure.

Vision and Objectives of the Laboratories

Vision

To provide advanced, well-equipped, and academically effective laboratory environments that support high-quality practical education, innovation, technical competence, and excellence in the Faculty of Information Technology.

Objectives

The laboratories of the Faculty aim to:

- support the practical achievement of course and program learning outcomes;
- provide students with access to modern computing systems, software platforms, and specialized equipment;
- strengthen applied competencies in programming, software engineering, networking, cybersecurity, artificial intelligence, data science, robotics, and embedded systems;
- support academic projects, graduation projects, technical workshops, and development-oriented activities;
- promote safe, responsible, and effective use of institutional resources; and
- enhance student preparedness for professional practice, innovation, and lifelong learning.

Laboratories Structure

Overview of the Faculty Laboratories

The Faculty of Information Technology includes a number of laboratories that differ in size, hardware configurations, software environments, and technical specialization. Collectively, these laboratories support the practical needs of the Faculty's programs and offer students access to diverse and relevant technological resources.

The laboratories documented in this handbook are:

- Lab 1302, Lab 1303, Lab 1304, Lab 1310, Lab 1311, Lab 1306, Lab 1309, Lab 1109, Lab 1108, and Lab 1206

The documented laboratories include standard and advanced computer workstations, smart teaching technologies, multimedia support tools, and software resources covering a broad range of computing disciplines. In addition, selected laboratories include specialized equipment for robotics, networking, embedded systems, and advanced computational work.

Classification of the Laboratories

For documentation and presentation purposes, the Faculty's laboratories may be broadly classified into the following categories:

Programming and Software Development Laboratories

These laboratories support practical teaching in programming, software engineering, application development, systems implementation, and database-related activities. Their software environment includes platforms such as Microsoft Visual Studio, Visual Studio Code, NetBeans, IntelliJ IDEA, Eclipse, PyCharm, Android Studio, Oracle SQL Plus, and Oracle Forms Developer.

Networks and Cybersecurity Laboratories

These laboratories support practical instruction in computer networking, routing and switching, network simulation, system security, and cybersecurity-related activities. Their software environment includes Cisco Packet Tracer, GNS3, Wireshark, Splunk Enterprise, and virtualized environments using VirtualBox and related operating systems or security platforms.

Data Science and Artificial Intelligence Laboratories

These laboratories support analytics, data visualization, statistical computing, machine learning, and AI-related applications through tools such as Anaconda, MATLAB, RStudio, Power BI, Tableau, and MongoDB.

Robotics, Embedded Systems, and Internet of Things Laboratories

These specialized laboratories provide a practical environment for robotics, embedded systems, automation, and IoT applications through equipment such as Arduino platforms, Raspberry Pi devices, sensors, actuators, robotic kits, and related instructional hardware.

Design and Modeling Laboratories

Certain laboratories also support design and modeling applications through specialized software such as AutoCAD and 3D Max, thereby extending the practical scope of the Faculty's technical infrastructure.

General Policies for Laboratory Use

The laboratories of the Faculty of Information Technology are academic resources intended to support structured teaching, supervised practical work, and approved academic use. All users are therefore expected to use these facilities responsibly and in accordance with university regulations and Faculty procedures.

Scope of Application

These policies apply to students, faculty members, laboratory supervisors, technical staff, and any other authorized users of the Faculty laboratories.

Access and Authorized Use

- Laboratories shall be used for academic, instructional, training, and approved institutional purposes only.
- Users are expected to enter only the laboratory to which they are assigned or formally authorized.
- Access outside scheduled class times may be permitted in accordance with approved arrangements, laboratory availability, and supervisory requirements.
- All users shall comply with the instructions of the course instructor, laboratory supervisor, and relevant Faculty authority.

Use of Computers and Software

- Laboratory computers and software shall be used only for legitimate academic and educational purposes.
- No software may be installed, removed, copied, altered, or reconfigured without prior authorization.
- Users must not modify system settings, network settings, security settings, or account configurations.
- Users should save personal academic files through approved means and should not leave unnecessary personal data on laboratory machines after use.

- Users are responsible for maintaining the confidentiality and security of their own accounts, credentials, and data.

Protection of Equipment and Resources

- All laboratory equipment shall be handled with care and used only for its intended purpose.
- Users must not disconnect, move, damage, or interfere with computer hardware, cables, peripherals, instructional devices, or specialized equipment.
- Specialized resources such as networking hardware, robotics kits, Raspberry Pi units, Arduino boards, sensors, and other electronic components must be used only within the context of approved academic activities.
- Any malfunction, damage, missing item, or irregularity must be reported immediately to the laboratory supervisor or relevant technical authority.

Conduct Within the Laboratory Environment

- Users are expected to maintain order, professionalism, and discipline inside the laboratory.
- Food and beverages are not permitted in laboratory spaces.
- Users must maintain cleanliness and proper organization of the workspace.
- Equipment and furniture must be left in good condition after use.

Violations and Accountability

Improper use of laboratories, devices, software, or specialized resources may result in disciplinary measures in accordance with university rules, Faculty procedures, and the seriousness of the violation.

Safety, Security, and Responsible Practice

The Faculty is committed to maintaining a safe and academically appropriate laboratory environment. This responsibility applies especially to laboratories containing advanced computing systems, smart instructional devices, networking equipment, robotics tools, and electronic components.

General Safety Principles

- All posted safety instructions and operational guidelines must be observed.
- Electrical outlets, power extensions, cables, and technical installations must not be misused.
- Any unusual smell, excessive heat, exposed wires, smoke, or technical malfunction must be reported immediately.
- Walkways, work areas, and exits must remain clear and accessible at all times.

إرشادات السلامة في مختبرات كلية تقنية المعلومات

Safety Guidelines in the Laboratories of the Faculty of Information Technology

كلية تقنية المعلومات

Introduction

The Faculty of Information Technology at Al-Ahliyya Amman University is committed to providing a safe learning environment to providng laboratonɛs seeminy, and cerurity propery cenadors in the throme, and manɒqiroments to their information technology.

General Laboratory Safety Instructions

- Follow supervisor instructions.
- Enter assigned lab during approved times.
- Maintain order, cleanliness, and discipline.
- Do not eat or drink inside the labs.
- Do not tamper with equipment.
- Academic use only.
- Do not install/remove software without permission.

Computer Use Safety

- Check device before use.
- Do not disconnect/reconnect cables without supervision.
- Report problems immediately.
- Save files safely.
- Shut down properly.

Electrical Safety

- Do not touch electrical outlets/wires unsafely.
- Do not use damaged or overheating devices.
- Do not use extra connections/ personal chargers without approval.
- Report smell/sparks/exposed wire immediately.
- Keep pathways clear.

Safety in Specialized Laboratories

Networks and Cybersecurity Labs

- Use routers, switches, network devices carefully.
- Do not change settings without permission.
- Handle cables carefully.
- Follow training instructions.

Smart Devices and Supporting Equipment

- Use smart displays, cameras, microphones for academic purposes only.
- Do not misuse equipment.
- Report technical issues.

Robotics and Embedded Systems Labs

- Do not use soldering tools/electronics without supervision.
- Handle Raspberry Pi, Arduino, sensors, motors carefully.
- Return all components after use.
- Do not operate robots carelessly.
- Follow battery/power instructions.

In Case of Emergency

- Stop using the device immediately.
- Inform the lab supervisor or instructor.
- Do not attempt to fix the issue.
- Follow university emergency instructions.
- Stay calm.

User Responsibility. Every user is responsible for:

- Protecting equipment
- Reporting hazards
- Following instructions for instructions
- Ethical resource use of ethics use

Safety is everyone's responsibility. السلامة مسؤولية الجميع. احمِ نفسك، احم

Safety is everyone's responsibility. Protect yourself, protect others, and protect the laboratories.

Safety in Specialized Laboratories

- Robotics, embedded systems, and networking equipment must be used carefully and, where necessary, under proper supervision.
- Small equipment and electronic components must be returned to their designated storage locations after use.
- Users must not attempt unauthorized repair, dismantling, or reconfiguration of laboratory devices or equipment.

Emergency Procedures

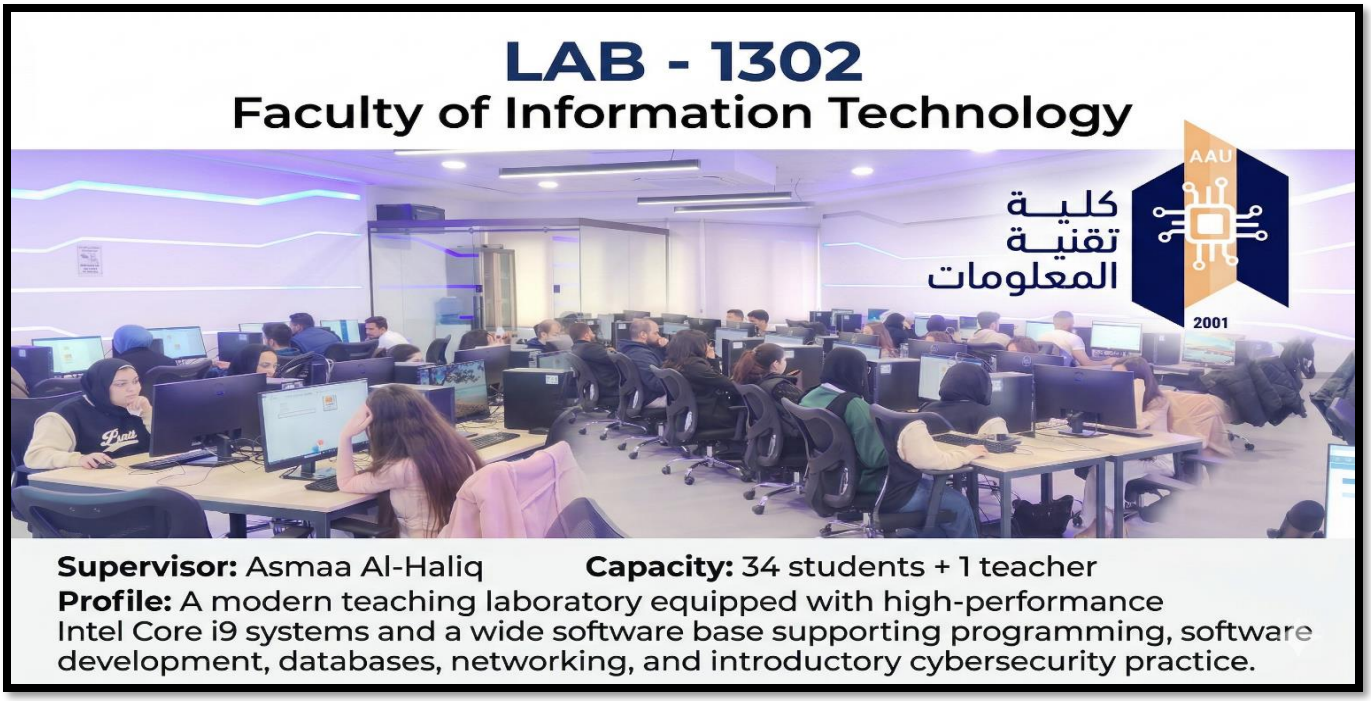
- In the event of any emergency, users must immediately inform the laboratory supervisor or the relevant university authority.
- All users must follow official university emergency, evacuation, and safety procedures without delay.

Responsible Academic Practice

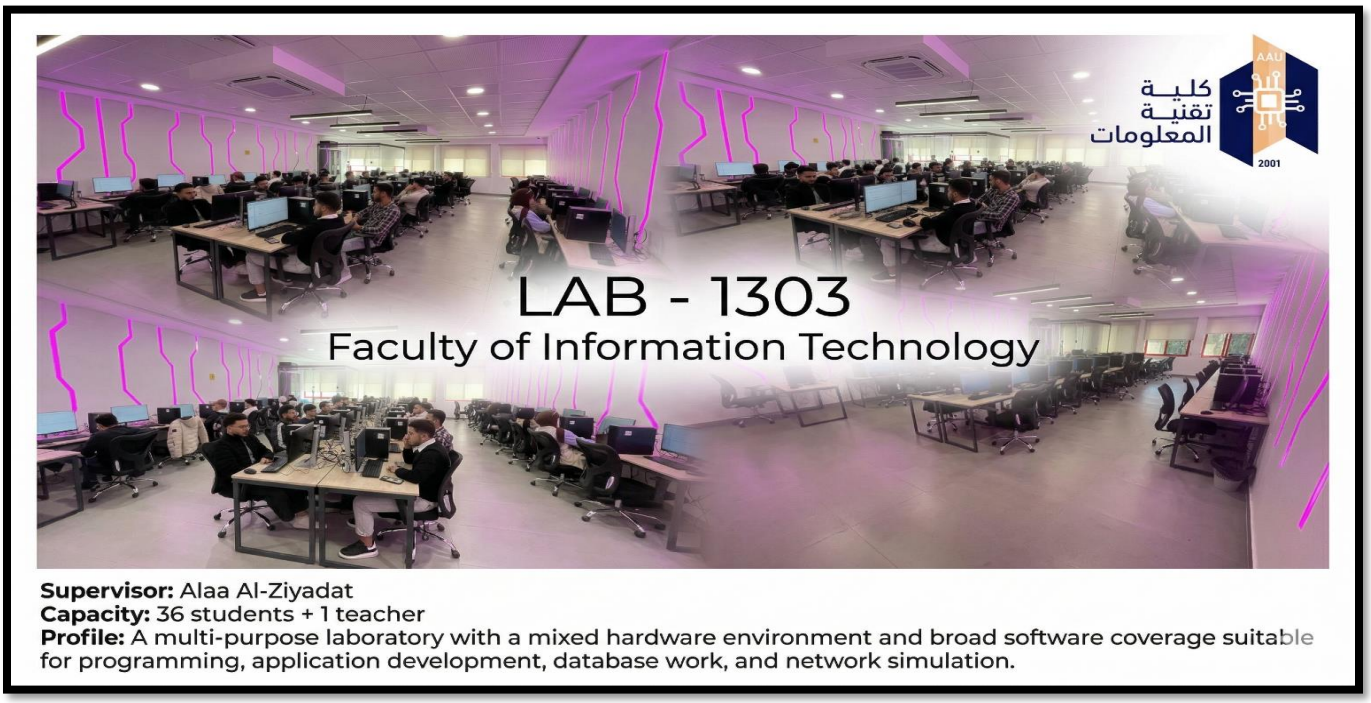
- Laboratory facilities should be used in a manner that supports learning, professional conduct, and institutional responsibility.
- Users are expected to respect shared resources, scheduled access, and the academic rights of others.

Summary Profiles of the Laboratories

Lab 1302

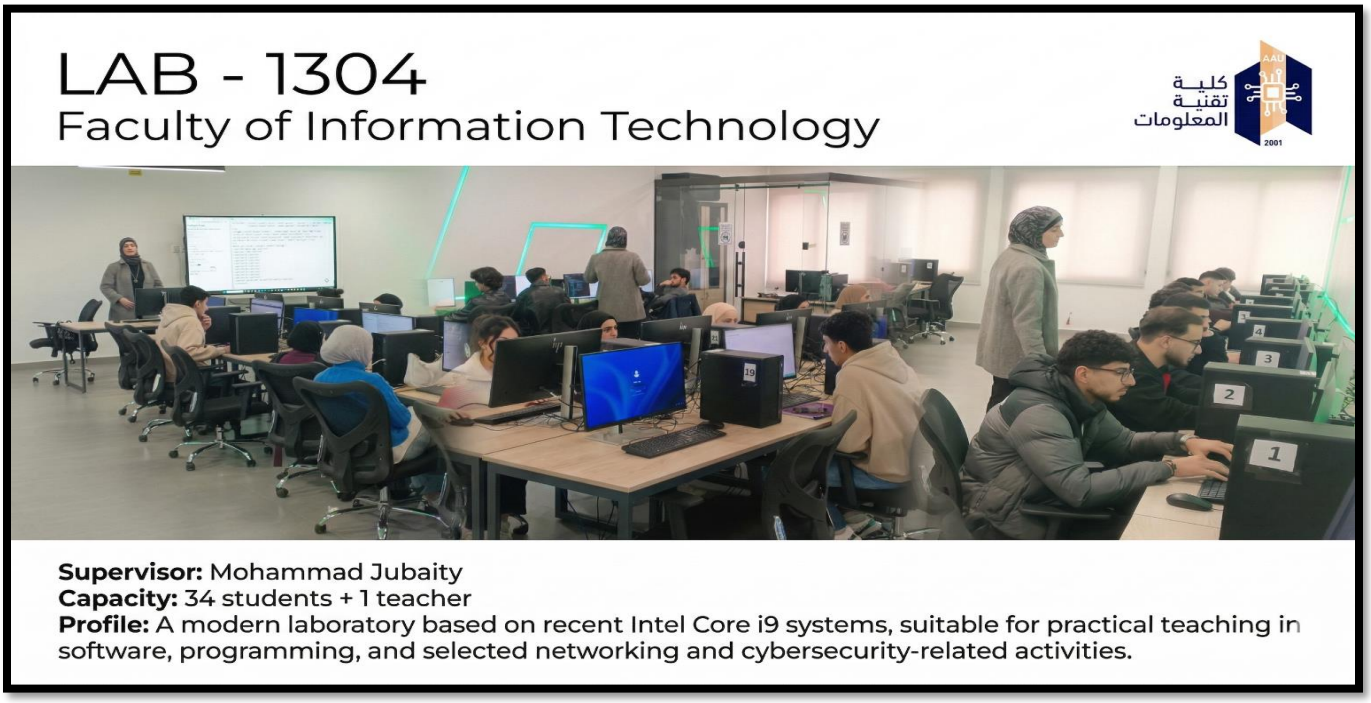


Lab 1303



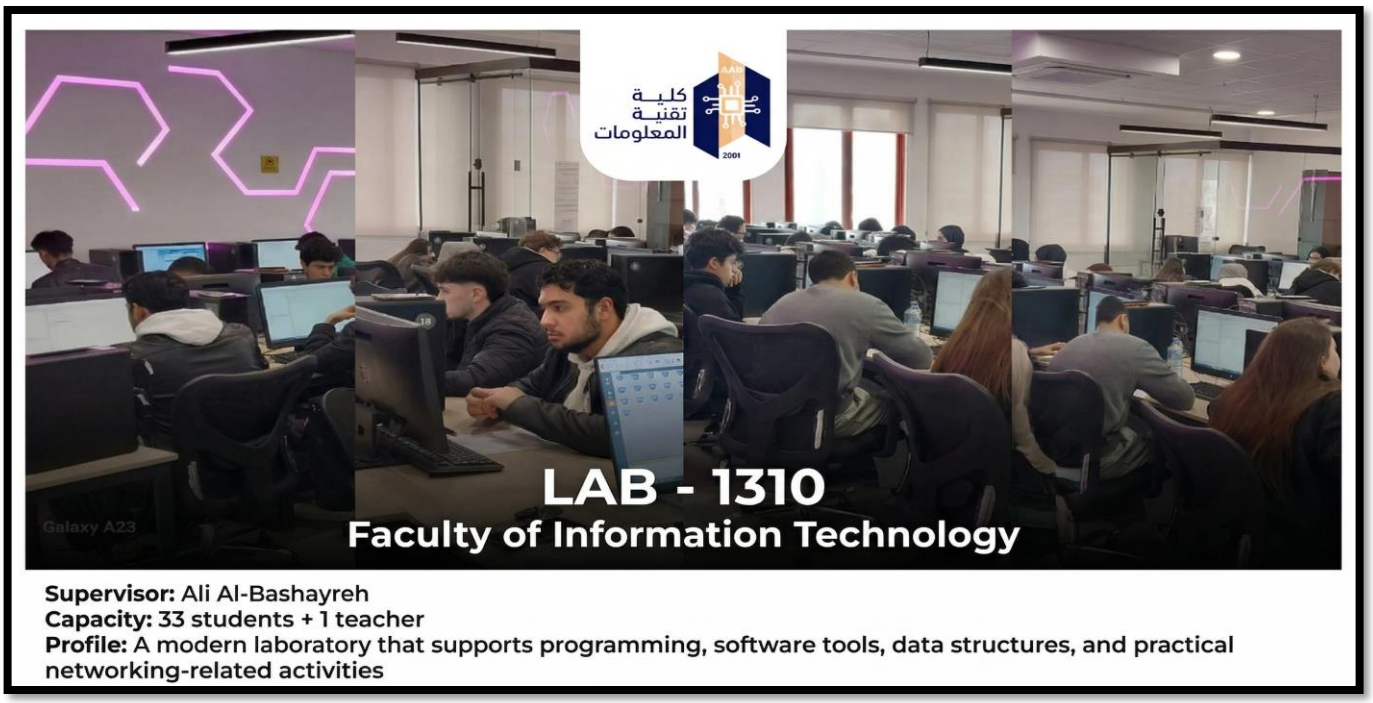
Supervisor: Alaa Al-Ziyadat
Capacity: 36 students + 1 teacher
Profile: A multi-purpose laboratory with a mixed hardware environment and broad software coverage suitable for programming, application development, database work, and network simulation.

Lab 1304



Supervisor: Mohammad Jubaity
Capacity: 34 students + 1 teacher
Profile: A modern laboratory based on recent Intel Core i9 systems, suitable for practical teaching in software, programming, and selected networking and cybersecurity-related activities.

Lab 1310



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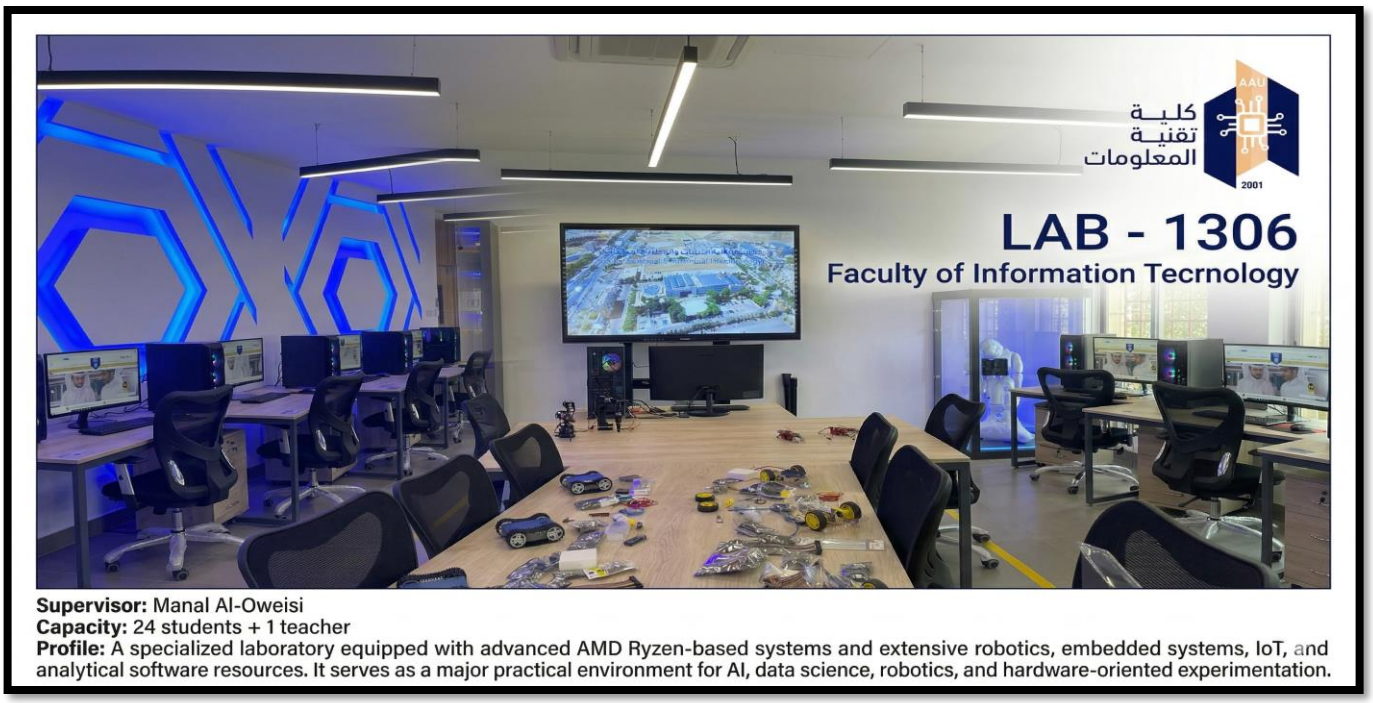
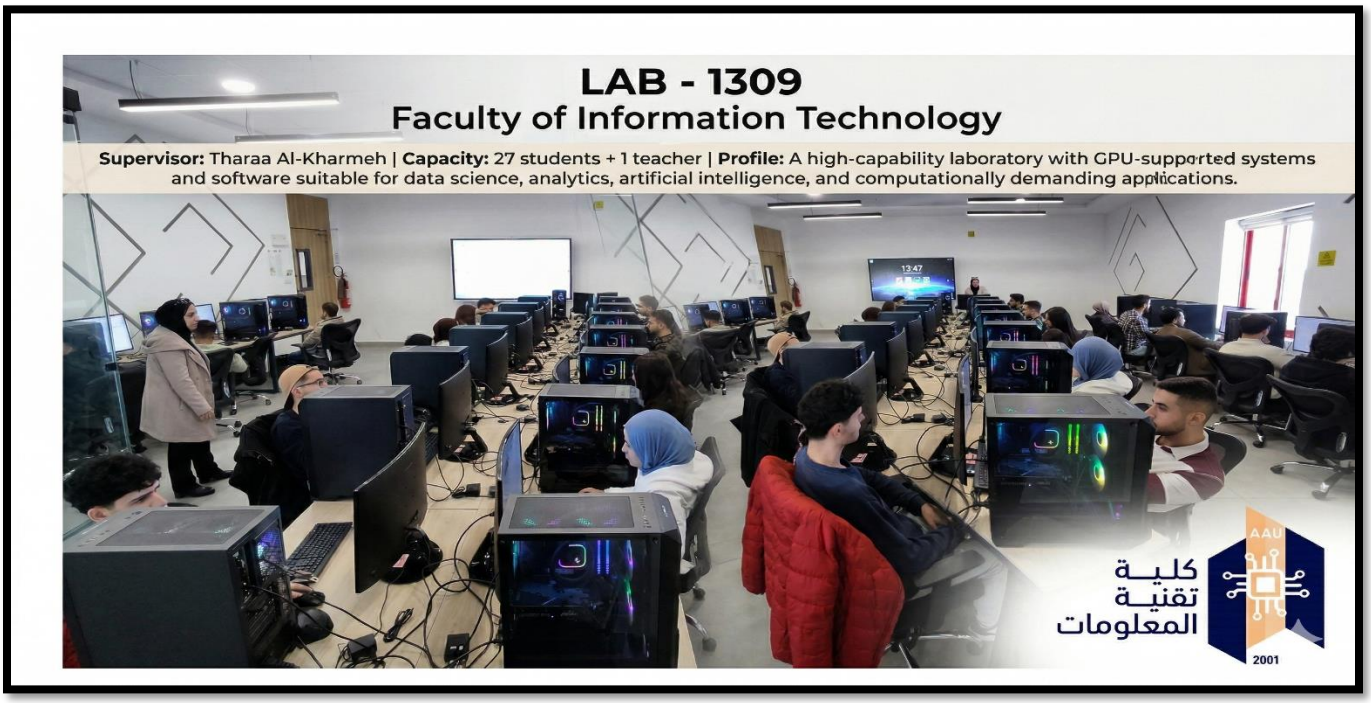
Lab 1311

Lab 1306

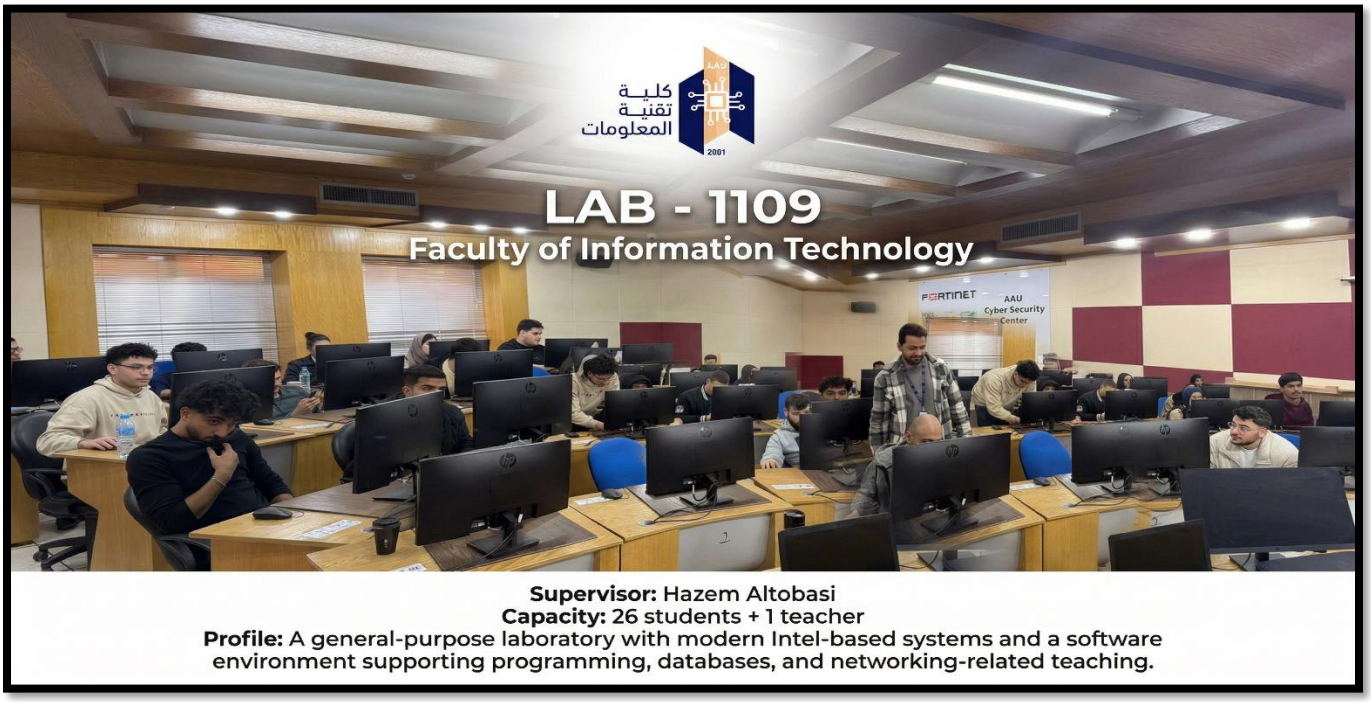


Supervisor: Manal Al-Oweisi
Capacity: 24 students + 1 teacher
Profile: A specialized laboratory equipped with advanced AMD Ryzen-based systems and extensive robotics, embedded systems, IoT, and analytical software resources. It serves as a major practical environment for AI, data science, robotics, and hardware-oriented experimentation.

Lab 1309



Lab 1109

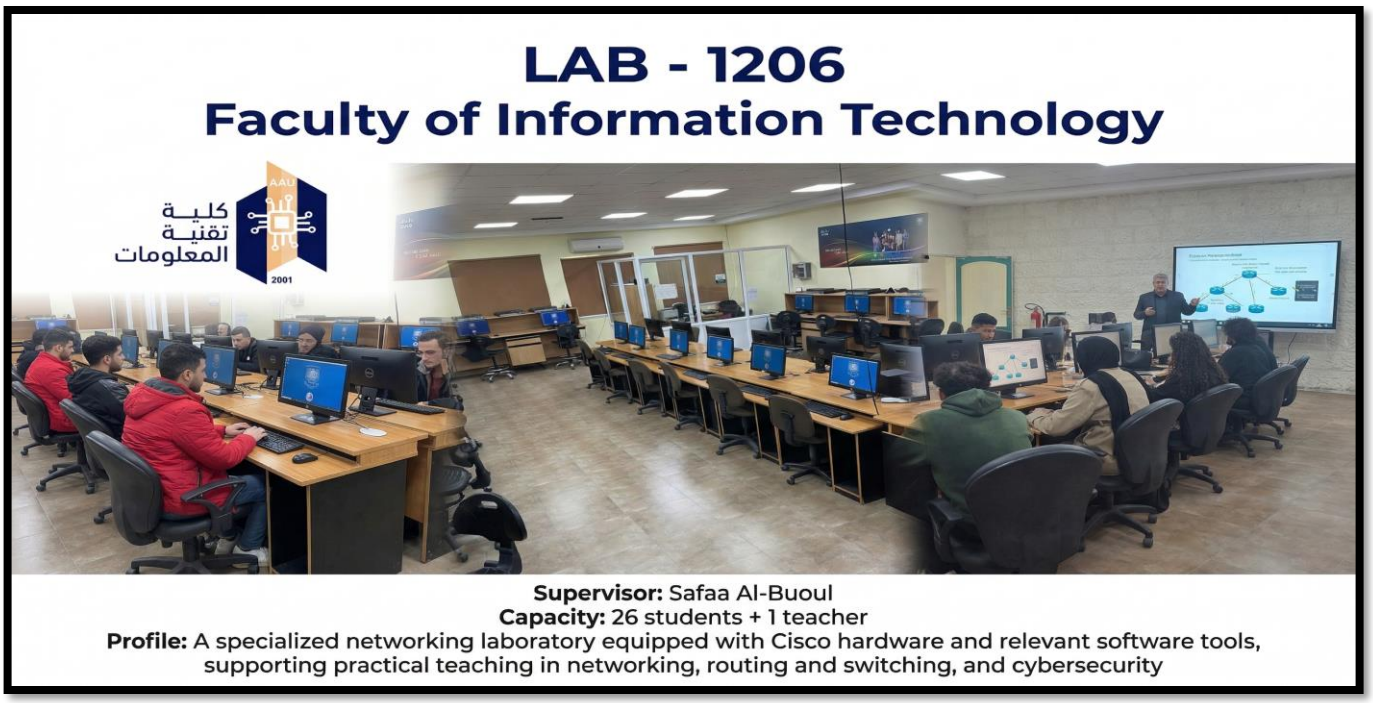


Supervisor: Hazem Altobasi
Capacity: 26 students + 1 teacher
Profile: A general-purpose laboratory with modern Intel-based systems and a software environment supporting programming, databases, and networking-related teaching.

Lab 1108

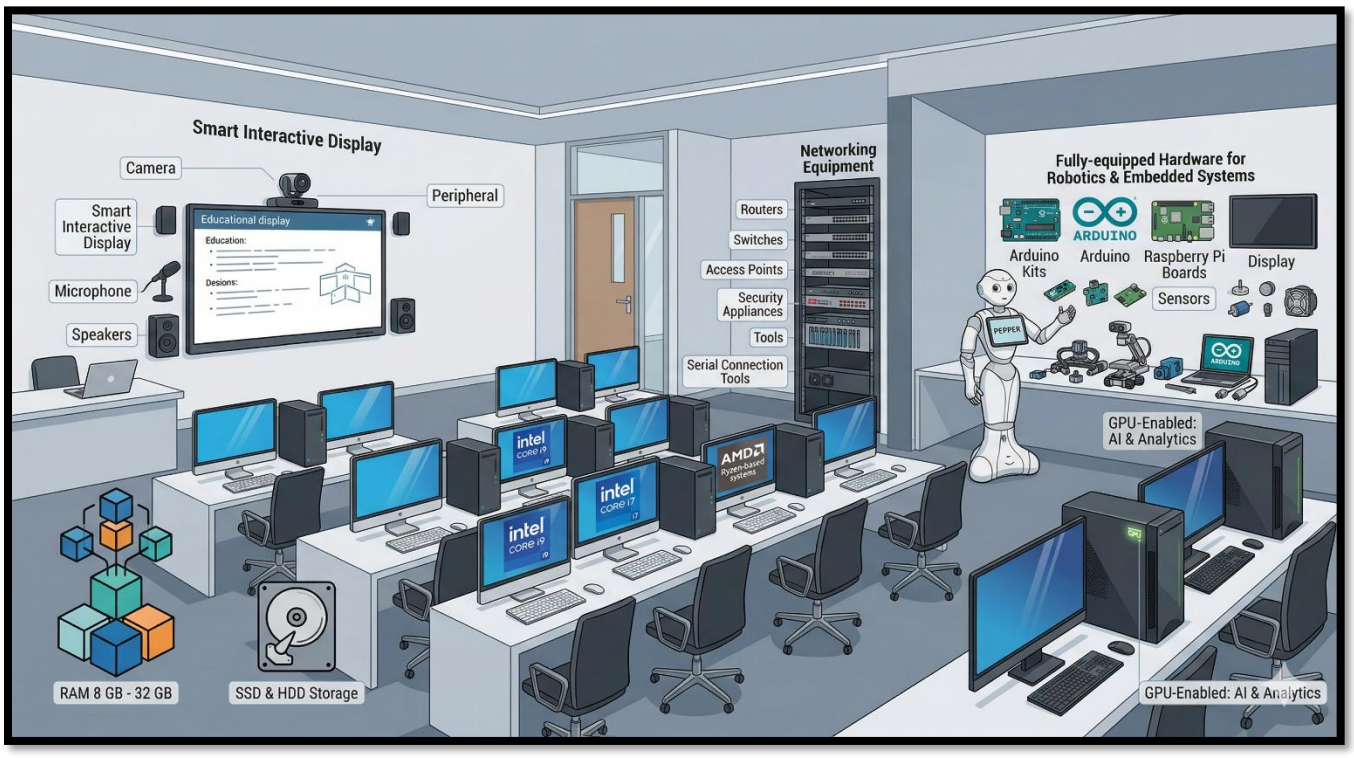
Supervisor: Mohammad Jubaity, **Capacity:** 26 students + 1 teacher,
Profile: A laboratory supporting general computing instruction in addition to design and modeling applications through software such as MATLAB, AutoCAD, and 3D Max.

Lab 1206



Hardware Resources by Category

The Faculty laboratories contain a diverse range of hardware resources that support both general and specialized instructional activities.



Computing Infrastructure

The documented laboratories include desktop systems with multiple configurations, including modern Intel Core i9 systems, Intel Core i7 systems, and AMD Ryzen-based systems. This variety enables the Faculty to support both standard instructional use and higher-performance technical activities.

Memory and Storage

Laboratory computers are configured with different memory and storage capacities according to purpose. These include SSD-based storage for speed and reliability, and in some laboratories additional HDD capacity for extended storage needs. Memory configurations range from 8 GB to 32 GB.

Smart Teaching and Multimedia Facilities

Several laboratories are equipped with smart interactive displays, cameras, microphones, and speakers to support presentation, interactive instruction, hybrid teaching needs, and classroom communication.

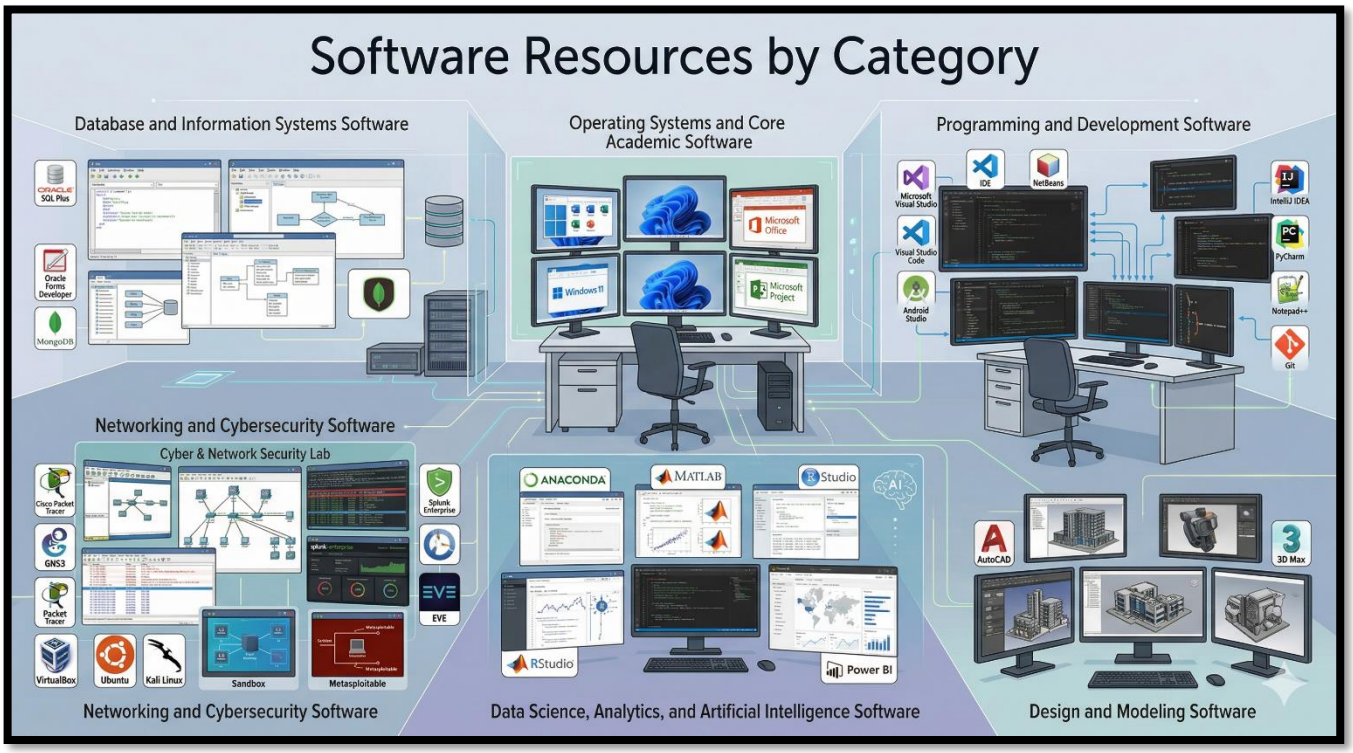
Specialized Hardware

Some laboratories contain discipline-specific hardware, including:

- networking devices such as routers, switches, security appliances, access points, and serial connection tools;
- robotics and embedded systems resources such as PEPPER robot, Arduino kits, Raspberry Pi units, sensors, motors, displays, and robotic assemblies; and
- advanced computing platforms with GPU-enabled machines suitable for analytical and AI-related applications.

Software Resources by Category

The software environment across the Faculty laboratories supports a broad spectrum of academic, technical, and applied learning activities.



Operating Systems and Core Academic Software

The laboratories primarily operate within a Windows 11 environment. Core academic software includes Microsoft Office and, in selected laboratories, Microsoft Project.

Programming and Development Software

The programming and development environment includes software such as:

- Microsoft Visual Studio
- Visual Studio Code
- NetBeans
- IntelliJ IDEA
- Eclipse
- PyCharm
- Android Studio
- Notepad++
- Git

These tools support software development, programming instruction, project implementation, and practical computing exercises.

Database and Information Systems Software

Selected laboratories include database-related platforms such as Oracle SQL Plus, Oracle Forms Developer, and MongoDB to support database and information systems instruction.

Networking and Cybersecurity Software

Networking and cybersecurity activities are supported through software such as:

- Cisco Packet Tracer
- GNS3
- Wireshark
- Splunk Enterprise
- VirtualBox
- supporting systems and environments such as Ubuntu, Kali Linux, EVE, Sandbox, and Metasploitable

Data Science, Analytics, and Artificial Intelligence Software

The laboratories also include analytical and AI-supportive platforms such as:

- Anaconda
- MATLAB
- RStudio
- Tableau
- Power BI

These platforms support data analysis, visualization, statistical work, machine learning, and related computational activities.

Design and Modeling Software

Some laboratories additionally provide specialized software such as AutoCAD and 3D Max for design-oriented and modeling-related applications.

Specialized Equipment and Facilities

Although several laboratories serve as general-purpose teaching spaces, some facilities are distinguished by specialized equipment that broadens the Faculty's practical capabilities.

Networking and Cybersecurity Facilities

Lab 1206 offers a specialized setting for hands-on practical instruction in networking and cybersecurity through the availability of Cisco routers, switches, security appliances, and complementary networking software tools.

Robotics and Embedded Systems Facilities

Lab 1306 is particularly significant as a specialized facility for robotics, embedded systems, and IoT work. Its equipment includes robotic platforms, microcontroller kits, sensors, displays, motors, and supporting components that make it suitable for hardware-based experimentation and applied technical learning.

Advanced Analytical and AI Facilities

Lab 1309 includes enhanced computational capabilities, including GPU-supported systems, which support data-intensive and analytically demanding applications in AI, machine learning, and advanced data science work.

Technical Support and Maintenance

The effectiveness of the laboratory environment depends not only on its equipment and software, but also on sustained technical support, maintenance, and operational care.

Maintenance Principles

The Faculty seeks to maintain laboratory readiness through periodic hardware inspection, software updates, system review, and continuous monitoring of the operational status of devices and facilities.

Reporting of Issues

Users are expected to report technical faults, software issues, damaged devices, missing items, or operational concerns to the laboratory supervisor or responsible technical authority as soon as they are identified.

Software and Configuration Management

Installed software and system configurations should be maintained and reviewed periodically in accordance with academic requirements, licensing conditions, compatibility needs, and institutional priorities.

Shared Responsibility for Resource Protection

All users share responsibility for protecting laboratory resources by following procedures, avoiding misuse, and exercising due care when using equipment and facilities.

Closing Statement

The laboratories of the Faculty of Information Technology reflect the Faculty's commitment to practical education, technological readiness, academic relevance, and student-centered learning. Their diversity in hardware, software, and specialized facilities enables the Faculty to support a broad range of disciplines and practical learning experiences in a structured and purposeful way.

This handbook presents these laboratory resources in a formal and professional framework suitable for institutional reference, academic use, and future publication development. It also provides a basis for continued documentation, enhancement, and presentation of the Faculty's laboratory environment in line with its educational mission and strategic aspirations.