



جامعة بيروت العربية
BEIRUT ARAB UNIVERSITY

Research Office

BAU Research Equipment HAND BOOK

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Introduction

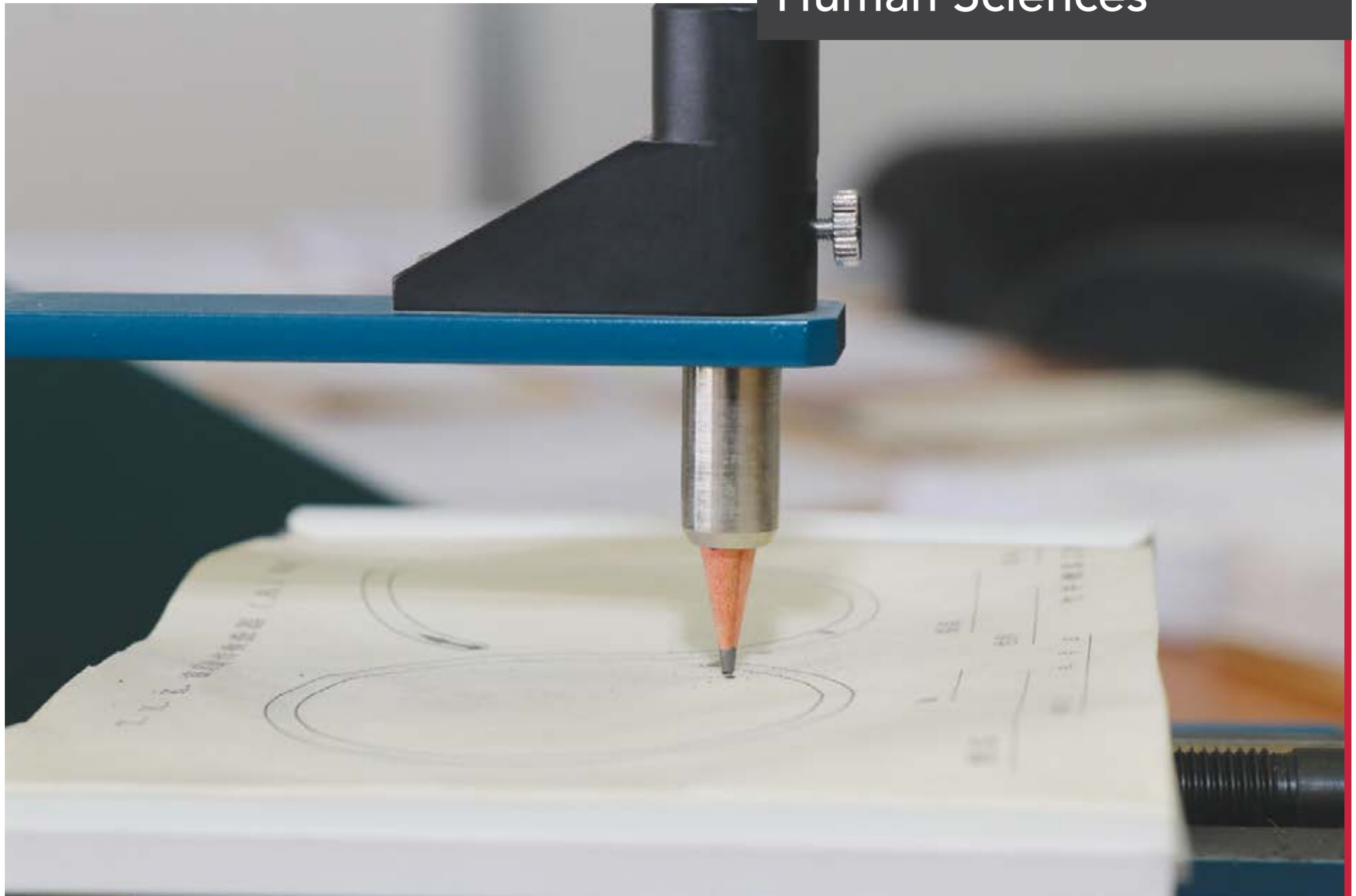
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It is part of Beirut Arab University's core strategy to motivate and endorse research activity. Our University seeks to grow in research productivity and fosters collaboration within BAU Faculties as well as with national and international partners. In an effort to keep our Faculty members informed on means and methods of collaboration, herewith is a compilation of the research equipment available in BAU Faculties and laboratories.

"The best way to conduct research on a larger scale is to make sure everyone knows what everyone else is doing... The sooner the better start talking to other people about what you are doing. Because that's what will stimulate things the fastest."-James Harris Simons

And, at the end of the day, "Academic success depends on research and publications."-Philip Zimbardo

Faculty of
Human Sciences



Psychology Laboratory

Location:
Beirut Campus, Hariri Building
10th Floor, Room H1016

Equipment Available	Scope of Utilization
Motor Coordination Apparatus	This lab is used by academic staff as well as undergraduate and graduate students
Transfer of Learning through Drawing by Mirror	
Holes Apparatus	
Mazes Apparatus	
Personality Scales	
Mental Ability Tests	
Cognitive Scales	

*All the abovementioned equipment is used by:
Faculty of Human Sciences- Department of Psychology

*All the abovementioned equipment is in good condition.

Language / Computer Laboratory

Location:
Beirut Campus, Hariri Building
10th Floor, Rooms H1007 / H1008

Equipment Available

Computers

Scope of Utilization

This computer lab is used for language classes.

*All the abovementioned equipment is used by:
Faculty of Human Sciences
- Department of Arabic Language and Literature
- Department of English Language and Literature
- Department of French Language and Literature
Language Center

*All the abovementioned equipment is in good condition.

Language / Computer Laboratory

Location:
Beirut Campus, Hariri Building
11th Floor, Room H1111

Equipment Available

Computers

Scope of Utilization

These computers are used for Mass Communication training sessions, and also for student registration and course evaluations.

*All the abovementioned equipment is used by:
Faculty of Human Sciences- Department of Mass Communication
Faculty Students

*The computers in the H1111 lab are in fair condition.

Faculty of Business Administration



Computer Laboratory

Location:
Beirut Campus, Main Building
3rd Floor, Rooms 322 and 324

Equipment Available

Computers

Scope of Utilization

The computer labs are used by undergraduate and graduate students.

*All the abovementioned equipment is used by:

- Faculty of Business Administration
- Admission Department
- Administration-Registration Department

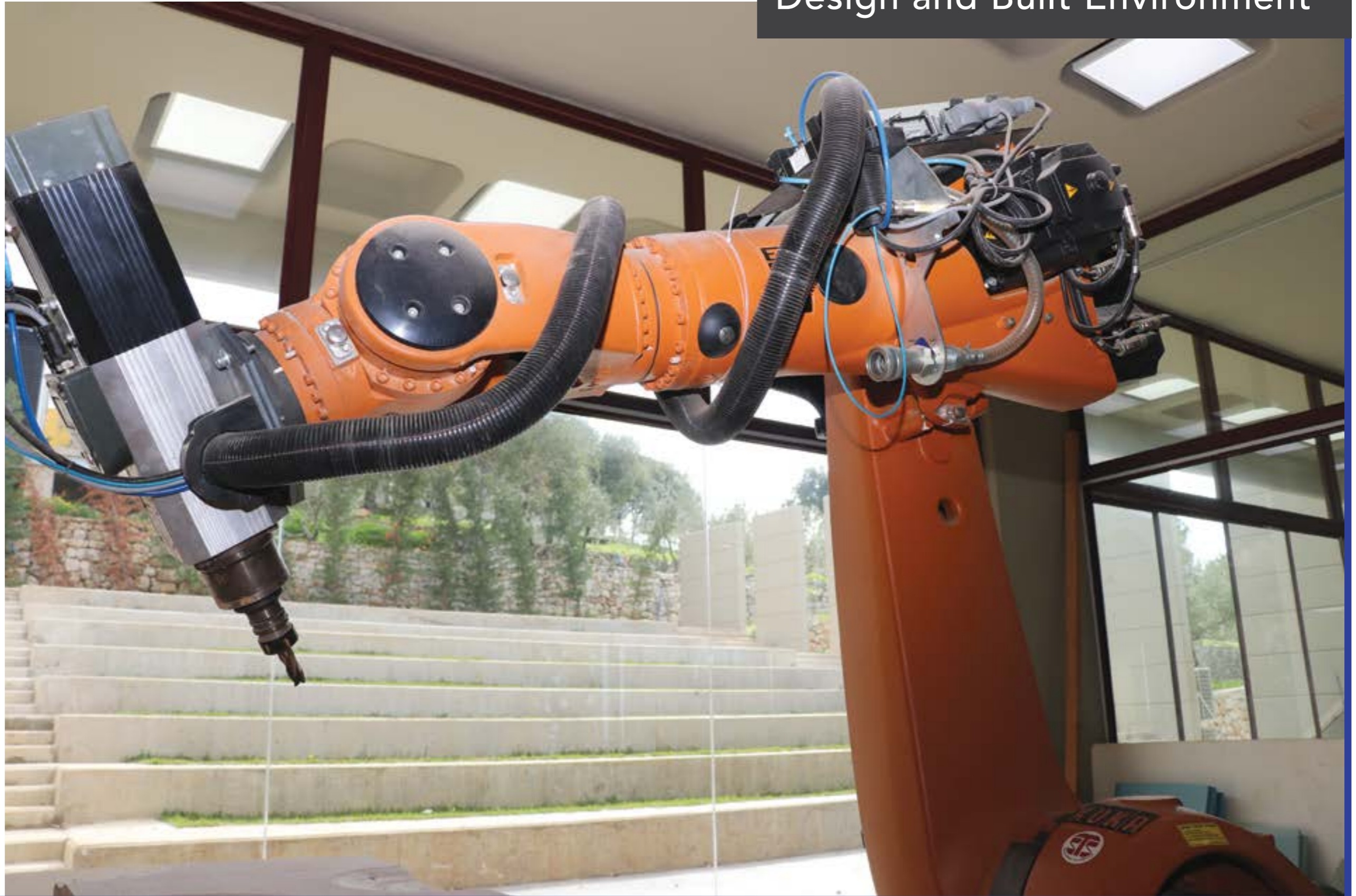
Faculty of Medicine

Faculty of Dentistry

Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Faculty of Architecture
Design and Built Environment



Environmental Laboratory

Location:
Debbieh Campus, A1 Building
Ground Floor, Lab Room 101

Equipment Available	Scope of Utilization
Weather Station	This device is used for educational and research purposes to study rainfall, relative humidity, temperature and wind measurements.
HOBO U12 Temp/RH/Light/Ext	This device is used for educational and research purposes to study temperature, relative humidity, and light intensity measurements.
HOBO MX CO ₂ Logger	This device is used for educational and research purposes to measure and record CO ₂ presence in buildings and other non-condensing environments. It measures CO ₂ from 0 – 5,000 parts per million (ppm).
EL-USB-CO Carbon Monoxide (CO)	This device is used for educational and research purposes. It measures and stores up to 32,510 Carbon Monoxide (CO) readings over a 0 to 1000ppm measurement range and -10 to +40°C (14 to +104°F) operating temperature range.
UX90-006 Room Occupancy	This equipment is used for educational and research purposes. It monitors room occupancy up to 12 meters away plus indoor light changes, to identify occupancy patterns and determine energy usage, possibly highlighting potential savings.
EL-USB-2 Humidity & Temperature	This equipment is used for educational and research purposes. It measures and stores over 16,000 temperature and humidity readings from -35 to +80° and 0 to 100%RH range at a resolution of 0.5°C (1°F) and 0.5%RH.
Luxmeter- Chauvin Arnoux	This equipment is used for educational and research purposes. It measures lighting between 20 and 20,000 lux.
RAYCAM 9Hz - Chauvin Arnoux	This equipment is used for educational and research purposes in thermographic diagnostics. Detector: 160 x 120 Thermal sensitivity: 0.08 °C at 30 °C Measurement range: - 20 °C to + 600 °C (1,000 °C or 1,500 °C available as an option).
Thermo-Hygrometer - Chauvin Arnoux	This equipment is used for educational and research purposes. It measures humidity in the air. With a sensitive remote probe, the hygrometer can measure humidity levels between 5% and 95% RH with startling accuracy.
Meteonorm V. 7 Software	This device is used for educational and research purposes and offers access to accurate data for any place on Earth: Irradiation, temperature and more climate parameters are available.
Fujitsu Celsius W 510 PC	These PCs are used for educational and research purposes and include the following programs: AutoCad 2016, 3D max 2016, Adobe Photoshop CS6, Revit 2016, ArcGIS 14.0.

*All the abovementioned equipment is used by:
Faculty of Architecture-Design & Built Environment

*Fujitsu Celsius W 510 PCs are in good condition.
*All the other equipment is in excellent condition.

Digital Modeling Laboratory

Location:
Debbieh Campus, A1 Building
Ground Floor, Lab Room 102

Equipment Available

Fujitsu CELSIUS W510 PC

Scope of Utilization

These PCs are used for educational and research purposes and include the following programs: AutoCad 2016, 3D max 2016, Adobe Photoshop CS6, Revit 2016, Rhino 5.11, Grasshopper, Adobe Illustrator CC, Adobe In Design.

*The abovementioned equipment is used by:
Faculty of Architecture-Design & Built Environment

*The abovementioned equipment is in good condition.

Digital Fabrication Laboratory

Location:
Debbieh Campus, Digital
Fabrication Lab Building

Equipment Available	Scope of Utilization
Robotic Arm KUKA Kr 210 - 2700mm reach	This device is used for educational, research, and professional use - used for cutting and milling for components and mould, engraving, pick and place.
CNC Machine SD 4180	This device is used for educational, research, and professional use - used for milling, cutting and engraving of materials (wood and plastics).
Laser Cutting Machine SD 1480	This device is used for educational, research, and professional use - used for cutting and engraving of materials (wood and plastics).

*All the abovementioned equipment is used by:
Faculty of Architecture-Design & Built Environment

*All the abovementioned equipment is in excellent condition.

Model Making Laboratory

Location:
Debbieh Campus, A1 Building
Floor B3

Equipment Available	Scope of Utilization
Cube Pro 3D Printer	These devices are used for educational, research, and professional use.
Cube X 3D Printer	
Laser Cutting Machine Universal	

*All the abovementioned equipment is used by:
Faculty of Architecture-Design & Built Environment

*All the abovementioned equipment is in excellent condition.

Faculty of Engineering



Aerodynamics Laboratory

Location:
Debbieh Campus
A2 Extension Building, Floor B1

Equipment Available

Wind Tunnel

Scope of Utilization

A wind tunnel is a tool used in aerodynamic research to study the effects of air moving past solid objects. A wind tunnel consists of a tubular passage with the object under test mounted in the middle. Air is made to move past the object by a powerful fan system or other means. The test object, often called a wind tunnel model, is instrumented with suitable sensors to measure aerodynamic forces, pressure distribution, or other aerodynamic-related characteristics.

*The abovementioned equipment is used by:
Faculty of Engineering - Department of Mechanical Engineering

*The abovementioned equipment is in good condition.

Equipment Available**Scope of Utilization**

Basic Hydrology System
Apparatus/1731-1

This equipment is used for the simulation of catchment area with rainfall and rivers used to measure the discharge and runoff values.

Permeability Tank

This equipment clearly shows flow through permeable media. It is also used to see flow lines and trace flow patterns, make models of sheet piling building foundations and simulated dams. This device is self-contained with large range of possible experiments.

Hydraulics

Location:
Debbieh Campus, Building A2
Floor B3, Room B333

*All the abovementioned equipment is used by:
Faculty of Engineering - Department of Civil & Environmental Engineering

*All the abovementioned equipment is in fair condition.

Communication & Acoustic Laboratory

Location:
Debbieh Campus, Building A2
Floor B3, Room B329

Equipment Available

Technodrill/U900100

Scope of Utilization

This is a device that is used for plotting and realizing printed circuit boards.

*The abovementioned equipment is used by:
Faculty of Engineering - Department of Electrical & Computer Engineering

*The abovementioned equipment is in good condition.

Measurement & Electronics Laboratory

Location:
Debbieh Campus, Building A2
Floor B3, Room B325

Equipment Available

Frequency Meter/2038

Scope of Utilization

This equipment is used to measure frequency.

*The abovementioned equipment is used by:
Faculty of Engineering - Department of Electrical & Computer Engineering

*The abovementioned equipment is in fair condition.

Mechanical Laboratory

Location:
Debbieh Campus, Building A2
Floor B4, Room B429

Equipment Available

Centrifugal Pump Test/Lowara
4HM9/A

Scope of Utilization

This unit introduces the main tests for centrifugal pump performance including pump speed, inlet/outlet, flow rate and motor torque series and parallel connections.

*The abovementioned equipment is used by:
Faculty of Engineering - Department of Mechanical Engineering

*The abovementioned equipment is in good condition.

Soil Laboratory

Location:
Debbieh Campus, Building A2
Floor B4, Room B425

Equipment Available

Advanced Digital Triaxial
System/TRI-SCAN 50

Cone Penetrometer Apparatus

Scope of Utilization

This equipment is used for determining the angle of internal friction cohesion and strength parameters of soil samples.

This equipment is used for determining the unconfined compressive strength.

*All the abovementioned equipment is used by:
Faculty of Engineering - Department of Civil & Environmental Engineering

*All the abovementioned equipment is in good condition.

Surveying Laboratory

Location:
Debbieh Campus, Building A2
Floor B4, Room B422

Equipment Available

GPS Rover/RADIAN-IS

Scope of Utilization

This equipment is used for surveying by Global Positioning System (GPS) and gives the position of control points from GPS Satellites and is also used for mapping.

*The abovementioned equipment is used by:
Faculty of Engineering - Department of Civil & Environmental Engineering

*The abovementioned equipment is in good condition.

Faculty of Science



Biochemistry & Molecular Biology Specialized Laboratory

Location:
Debbieh Campus, Laboratories
Building A3, Ground Floor, Room
G104-105

Equipment Available	Scope of Utilization
Rotor-Gene® Q (Qiagen) Real Time PCR Detection System	This system is highly suited to precisely quantitate and analyze changes in gene expression, genotyping, pathogen detection, concentration measurement, protein analysis, enzyme kinetics, and many other areas of research. The powerful and user-friendly software provides simplicity for beginners as well as an open experimental platform for advanced users.
C1000™ Thermal Cycler PCR BioRAD	This equipment is used for copying and amplifying fragments of nucleic acids (DNA).
PCR Thermocycler Quanta Biotech Ltd (Q-Cycler)	This device is used for analyzing clinical specimens for the presence of infectious agents, e.g. HIV, hepatitis, human papillomavirus and others.
Thermo- Px2 Thermal Cycler (Thermo Electron Corporation)	In forensic science, using PCR-based DNA fingerprinting, fragments of DNA can be isolated from a crime scene and compared to a database of DNA of convicts or criminals.
Thermo Lbsystems Multiskan® EX - ELISA Microplate Reader	This device is used for reading 96-well microplates, adapted ELISA and other colorimetric assays and immunological reactions. It is also used for: Protein assays; Growth curve and hormone assays; Endotoxins; Food diagnostics; HIV assays; Hybridization assays; Minisequencing assays; Cytotoxicity; Cell adhesion; Signal transduction; Endotoxins; Antioxidants; Food diagnostics.
Thermo Scientific™ Multiskan™ FC - ELISA Microplate Reader	
Thermo Lbsystems Wellwash® - ELISA Washer	This equipment can be used in research or routine-test laboratories to wash microtiter microplates and strips in 96-well plate format that meet the SBS standards.
GelDoc-It®2 & ChemiDoc-It®2 Imagers	This equipment is used for capturing, documenting and analyzing fluorescent gel images, as well chemiluminescent blot images, including Western blots.
HL-2000 HybriLinker Hybridization Oven	This device is used for crosslinking of nucleic acids (DNA or RNA) to a nitrocellulose membrane, for hybridization reactions in Southern and Northern blotting assays, and other UV Crosslinking.
Ultracentrifuge (Beckman Coulter; OptimaL-100xP)	This device is used for proteomics, cytomics or genomics, centrifugation of solutions containing: RNA, DNA, microsomal p450 extraction and more.
Cold Centrifuge-Centurion Model K2015R – Bench Top	These devices are used to purify cells, subcellular organelles, viruses, proteins, and nucleic acids (DNA and RNA).
Cold Centrifuge Hero Lab GmbH (UniCen 15DR)	
Thermo Scientific Heraeus Pico 17 Microcentrifuge	This device is used for separation of solutions and biological samples. It is used to purify cells, subcellular organelles, viruses, proteins, and DNA.

Equipment Available	Scope of Utilization
Spectro UV-2505 UV-Vis Spectrophotometer (LABOMED Inc)	This equipment is used for pharmaceutical manufacturing, health, clinical laboratory, biochemistry, petrochemistry, environmental protection, quality control, water management, food processing, agriculture, and for a wide range of businesses and industries.
UV Spectrophotometer- UV/ VIS (Evolution™ 60, Thermo Scientific)	This spectrophotometer is used to determine the absorbance in solutions with wavelength range: 190 -1100nm in 1.5 ml to a maximum 4 ml cuvettes; Protein/nucleic acid measurement; Kinetics measurement/analysis; Quantitative protein analysis program with six different calibration methods.
WiseTis – Homogenizer Wise Tis HG-15D	This device is used for the disruption of cells and tissues.
BANDELIN SONOPULS ULTRASONIC HD 2070 Homogeniser	This equipment is used for the following: emulsification; homogenizing of substances; suspending; cell disruption (bacteria, virus, tissues); degassing of fluids; accelerating chemical reactions; sonochemistry; sample preparation for HPLC; sample preparation for particle size analysis; waste-water analysis.
SONIC RUPTUR 250 (OMNI INTERNATIONAL; The Homogenizer Compound)	This device is used to disrupt cells, bacteria, spores, emulsify immiscible liquids, homogenize, uniform dispersion of particles in liquids, accelerate reactions, depolymerize large molecules.
MUPID-exU Horizontal Electrophoresis System	This equipment is used for electrophoretic separation of DNA fragments and RNA molecules on agarose gels. It is used in forensic medicine, molecular biology, genetics, biochemistry, microscopical biology; and also used in cloning, RFLP, PCR, and other molecular biology assays.
Western Blotters (Vertical Gel Electrophoresis Unit) OmniPAGE TETRAD Mini-Protein Electrophoresis	This device is used for electrophoretic separation of protein samples and for blotting proteins on nitrocellulose, or PVDF membranes in western blotting assays.
Tissue Processor - HistoMaster 2052//2L/Z/A analog, MDS	This equipment is used to prepare histological blocks from different biological samples.
Manual Rotary Microtome - microTec (Cut 4050)	This equipment is used to cut thin slices of histological blocks. Cuts range: starting from 1µm - 60µm
Digital Cryo console Cold Plate Model ES 500–2	This device is used to chill the paraffin blocks rapidly and to ensure the best stability cooling performance. It can be used as a standalone unit near microtome station and embedding unit. It can be used with 60 cassettes.

Equipment Available	Scope of Utilization
Paraffin Wax Dispenser (J.P.SELECTA Dispenser)	This device is used to dispense paraffin wax for the preparation of different histological blocks with temperatures of 0 °C -100 °C.
Thermostatic Baths: Paraffin wax floating out bath for histology samples "Termofin" (J.P.SELECTA, Thermofen)	This equipment is used for the fusion and preservation of paraffin wax in a liquid state that enables the users to see the floated sections. It is also used to place slices of the tissue embedded paraffin ribbons in water bath (0 °C -100 °C).
Forma (-86 °C)- Ultra-Low Temperature Upright Freezers (Thermo)	This freezer is used to store specimens, tissues, and reagents at ~-70 °C
Leica DM500 Binocular Brightfield Microscope with Leica ICC50 E Camera Module	This microscope is used for observing different bacterial, plant, animal and human cells and tissues. It can be used to study living organisms, cells and small organisms that cannot be seen with the naked eye.
Steam Sterilizer (Autoclave) – Raypa	This device is used to sterilize buffers, liquids, solutions, culture media, glassware, plastic wares, surgical instruments, metallic elements, waste bags, medical and pathogenic wastes.
Hot Drying Oven (CONTHERM)	This oven is used to dry samples, glassware, and to melt wax. Temperature range: 20 °C - 100 °C.

*All the abovementioned equipment is used by:
Faculty of Science

*All the abovementioned equipment is in good condition.

Tissue Culture Specialized Laboratory

Location:
Debbieh Campus, Laboratories
Building A3 Ground Floor, Room
G109

Equipment Available	Scope of Utilization
OPTIKA Model IM-2 Trinocular Inverted Microscope with OPTIKAM Pro. Digital Camera	This device is used for routine and research applications; Bright field: for observation method in optical microscopy, and is ideal for fixed, stained specimens or other types of samples having high natural absorption of visible light. It reveals many cellular structures that are not visible with a simple brightfield microscope.
Cold Centrifuge-Centurion model K2015R – Bench top	This equipment is used to purify cells, subcellular organelles, viruses, proteins, and nucleic acids (DNA and RNA).
GILSON Safe Aspiration Station and Kit	Adjustable aspiration speed and handles, ideal for ELISA tests, cell culture and any other contaminated or hazardous liquid aspiration and disposal. Any application dealing with aspiration and disposal of contaminated liquids in pharmaceuticals, hospitals, diagnostics, clinical chemistry, research and control.
FALC Digital Waterbath WB-MD24	This equipment is used for heating fluids, buffers, culture media, etc.

*All the abovementioned equipment is used by:
Faculty of Science
Faculty of Pharmacy
Faculty of Dentistry
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Specialized Microbiology Laboratory

Location:
Debbieh Campus, Laboratories
Building A3, Ground Floor, Room
G110

Equipment Available	Scope of Utilization
Steam Sterilizer	This device is used to sterilize buffers, solutions, culture media, glassware, surgical instruments, plastic wares, equipments, medical and pathogenic wastes by subjecting them to high-pressure saturated steam at 121 °C for around 15–20 minutes.
Incubator (Mettler & Wtc binder, E306.0152 & 920378)	This incubator is used to grow and maintain microbiological cultures or cell cultures by maintaining optimal temperature, humidity and gaseous content of the atmosphere inside.
Shaking Incubator (ZHWY SERIES DOUBLE- LAYER CONSTANT TEMPERATURE)	This incubator is used for growth of bacterial and fungal cultures at different rpm (from 30 to 300 rpm) and temperatures (from 4°C to 60°C).
Cooling Incubator (STIK)	This incubator is intended for environmental test, thermostat test, low temperature preservation. It is used for applications that require cold temperatures, in the range of room temperature and below, down to sub-zero temperatures (-10°C).
Centrifuge (CENTURION)	This device is used for routine laboratory work. It has a Max RCF 13500 g; max speed 12000 rpm; various acceleration and deceleration rates.
Nitrogen Distiller (RAYPA, DNP-2000)	This equipment is used to perform nitrogen analysis and protein determination according to Kjeldahl method, in cells, food industry and with other applications in environmental and chemical industries.
Fermenter (BIOTRON, GR-1002F-06)	This device is used for the cultivation of microorganisms that produce hormones, vaccines, antibiotics, vitamins, enzymes, and other metabolites. It provides a controlled environment for optimal biomass/product yields. It is used for large cultures containing 3 liters of growth medium.
Vacuum Freeze Dryer (BOYIKANG, FD-ID-50)	This equipment is used for preservation of temperature sensitive products, such as enzymes, blood plasma, vaccines, etc, and for conversion of suspension and liquid samples to powder at -50°C. It is used to improve storage life and improve marketing of the end product.
Computerized Spectrophotometer (JASCO RESEARCH GRADE V-630 UV/VIS)	This spectrophotometer works in the ultraviolet and visible range of 190-1100 nm.
Natural Convection Oven (SHINSAENG SDON-301, TIG22-SDON301-01)	This equipment is used for sterilization, drying, and thermal storage tasks that do not require high drying rates.

Equipment Available

Colony counter (J-2 Colony counter semi-automatic digital)

Scope of Utilization

This device is used for counting colonies of bacteria growing in a culture and to calculate the bacterial concentration in samples. It is used also to evaluate the quality of food and water.

*All the abovementioned equipment is used by:
Faculty of Science
Faculty of Pharmacy
Faculty of Dentistry
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Biology Research Laboratory

Location:
Debbieh Campus, Laboratories
Building A3, Ground Floor, Room
G111-112

Equipment Available

Western Blotters (Vertical Gel Electrophoresis Unit)
OmniPAGE TETRAD Mini-Protein Electrophoresis

MUPID-exU Horizontal Electrophoresis System

Scope of Utilization

This equipment is used for electrophoretic separation of protein samples and for blotting proteins on nitrocellulose, or PVDF membranes in western blotting assays.

This device is used for electrophoretic separation of DNA fragments and RNA molecules on agarose gels: Used in forensic medicine, molecular biology, genetics, biochemistry, microscopical biology; and also used in cloning, RFLP, PCR, and other molecular biology assays.

*All the abovementioned equipment is used by:
Faculty of Science
Faculty of Pharmacy
Faculty of Dentistry
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Water and Soil Analysis Laboratory

Location:
Debbieh Campus, Laboratories
Building A3, Floor B2, Room 204

Equipment Available	Scope of Utilization
Calorimeter Visible Merck Spectroquant (Multy)	This device is used to study the absorption of visible radiation by a colored substance within the wavelength range of 400 nm to 800 nm.
Ultraviolet-Visible (UV-VIS) Spectrophotometer Jasco V630	This equipment measures absorption/ transmission of compounds, and can also be used to see how a reaction has progressed. It is used in many areas of science including microbiology, biochemistry, forensics, physics, and medical health.
Spectrophotometer (UV-Visible) Aqua Quest (CECIL)	This equipment is pre-programmed for use with proprietary reagent test kits, in a vast range of assays dedicated to water and effluent analysis.
Spectrophotometer (UV-Visible) Diet Quest (CECIL)	This equipment is pre-programmed for both food and beverage analysis. Methods include single and multi-wavelength measurements and spectral scanning.
Spectra Analyzer (Near-IR) Zeutec opto-Elektronik GmbH 190-00100	This device is a dual beam near infrared spectrometer which is used to analyze the composition of samples using the near infrared reflectance characteristics of the sample spectra. It is suitable for the composition analysis of a wide variety of solids, powders, liquids and pastes.
Shaker Incubator ZHWY Series	This device can be considered a mix of an incubator and a shaker. It has an ability to shake, while maintaining optimal conditions for incubating microbes or DNA replication experiments.
Kjeldahl Nitrogen R Espinar, S.L-DNP-2000	This device provides a method for the quantitative determination of organic nitrogen in chemical substances like ammonia.
Multi-probe Parameter 556MPS	This device is designed for water applications; it is a portable meter which measures critical water quality parameters - without the need for multiple instruments; measures dissolved oxygen, conductivity, temperature, and pH.
Dissolved oxygen meter EUTECH - DO 100	This equipment measures the level of free, non-compound oxygen present in water or other liquids. It is used for temperature profiling in lakes, stream, and for river monitoring.
Flame Photometer Sherwood Model 360	Flame Photometer Sherwood Model 360, is an apparatus where emission of radiation by neutral atoms is measured. Applications: For qualitative analysis: comparison of spectrum emission wavelengths of samples with that of standards; For quantitative analysis: used to determine the concentration of group IA and. IIA elements IIA (like Li, Na, K & Ca, Ba) are only analyzed.

Equipment Available

Atomic Absorption
Spectrometers AAS

Scope of Utilization

This device is used for the analysis and quantification of trace elements in both solid and liquid samples. It has high selectivity and sensitivity and has an accurate trace elemental analysis with a high performance double beam, graphite furnace and dual-atomizer double beam AA spectrometers.

*All the abovementioned equipment is used by:
Faculty of Science
- Department of Chemistry
- Department of Biological Sciences

*All the abovementioned equipment is in good condition.

Specialized Center for Chemical Analysis Laboratory

Location:
Debbieh Campus, Laboratories
Building A3, Floor B2, Room B203

Equipment Available	Scope of Utilization
Fourier Transform Infrared (FT-IR) Spectroscopy - Nicolet is5	This device is used to determine the structures of molecules based on the molecules' characteristic absorption of infrared radiation. It is used in organic synthesis, polymer science, petrochemical engineering, pharmaceutical industry and food analysis.
Nuclear Magnetic Resonance (NMR) Spectroscopy	This device acts as a research technique that exploits the magnetic properties of certain atomic nuclei. A simple NMR experiment produces information in the form of a spectrum.
Thermal Analyzer (Labsys-TG-DTA/DSC)	The Thermal Analyzer (Labsys-TG-DTA/DSC) studies the properties of materials as a function of temperature or time.
GC-MS-QP5050A	Gas chromatography–mass spectrometry is an analytical method that combines the features of gas-chromatography and mass spectrometry to identify different substances. Applications include: detection of illegal drugs in urine, hair, or blood, fire investigation, environmental analysis, explosives investigation and identification of unknown samples.

*All the abovementioned equipment is used by:
Faculty of Science
- Department of Chemistry
- Department of Biological Sciences

*All the abovementioned equipment is in good condition.

Computational Research Laboratory

Location:
Debbieh Campus Laboratories
Building A3, Floor B3, Room B317

Equipment Available	Scope of Utilization
HP EliteDesk 800 G2 Tower Business PCs	This device is used for research and has the following specifications: <ul style="list-style-type: none"> - Intel Core i7 – 6700 3.4 G 8M 2133 4C CPU - 16 GB DDR4-2133 DIMM (2x8GB) RAM - 500GB 7200 RPM SATA 2.5 HDD - HP LED 21" Monitor - Windows 10 Pro
HP Z640 Workstation	This device is used for research and has the following specifications: <ul style="list-style-type: none"> - Processor Intel® Xeon® E5-1680 v4(2.2 GHz, 35 MB cache, 14 cores) - 64 GB RAM - Internal Storage 2TB 7200 RPM SATA 1st HDD - HP LED 21.5" BlacklitMonitor
HP Z840 workstation	This device is used for research and has the following specifications: <ul style="list-style-type: none"> - Processor Intel® Xeon® E5-2697 v4 (2.3 GHz, 45 MB cache, 18 cores) - 256GB DDR4-2400 (4x64GB) RAM - Internal Storage 1 TB HP Z Turbo Drive G2 TLC PCIe SSD - Available Graphics NVIDIA® QUADRO® P600 (2 GB GDDR5, 4 x Mini DisplayPort 1.4)

*All the abovementioned equipment is used by:
Faculty of Science

*All the abovementioned equipment is in good condition.

Specialized Laboratory of Materials Science

Location:
Debbieh Campus
Laboratory Building A3, Floor B2
Lab G104-105, Room B202

Equipment Available

LTF - Tube Furnace - 1200°C - Lenton Furnace

* This equipment is used by:
Faculty of Science
-Department of Physics
-Department of Chemistry

HIOKI "3532-50 LCR HiTESTER"

* This equipment is used by:
Faculty of Science - Department of Physics

Vickers Hardness Tester MHVD-1000IS

* This equipment is used by:
Faculty of Science
-Department of Physics
-Department of Chemistry
-Department of Biological Sciences
Faculty of Engineering
Faculty of Dentistry
Faculty of Medicine

Scintillation Detectors

* This equipment is used by:
Faculty of Science - Department of Physics

XR 4.0 Expert Unit, X-Ray Unit, 35 kV

* This equipment is used by:
Faculty of Science
-Department of Physics
-Department of Chemistry
Faculty of Engineering

Scope of Utilization

This device is highly suited to materials science research field such as: crystal growing, general heat treatment of several materials including the nano-materials, organic and inorganic samples, sintering and firing of ceramics and many other areas of research.

This device measures different parameters "at low and high temperature" such as $|Z|$, $|Y|$, θ , R_p , $R_s(ESR)$, G , X , B , C_p , C_s , L_p , L_s , D ($\tan\delta$), and Q . It is convenient for protocol optimization.

This equipment is used for testing the hardness of metallographic structure. It is used for carburizing, nitriding, hardening, surface coating, steel, nonferrous metals, the hardness of the glass, ceramic materials and biomaterials such as bones, teeth and tissues plus many other materials in different fields of science.

This device is used for the detection of gamma-ray radiation, environmental study, nuclear physics research, medical physics, determination of radiation properties of different materials, and radiation safety.

Extension sets of the XR 4.0 product family permit custom applications in research in physics, chemistry, biology, medicine, material sciences and geo sciences, such as: structure of nano-oxide materials, superconducting materials and cement.

Equipment Available	Scope of Utilization
<p>Manual Hydraulic Press</p> <p>* This equipment is used by: Faculty of Science -Department of Physics -Department of Chemistry Faculty of Engineering</p>	<p>This equipment can be used in research or laboratories such as XRF pellet preparation of glass samples for X-ray Fluorescence spectroscopic analysis.</p>
<p>Spin Coater-Laurell WS-650MZ-23NPPB</p> <p>* This equipment is used by: Faculty of Science -Department of Physics -Department of Chemistry Faculty of Engineering</p>	<p>The WS-650 series is typically employed for Solvent, Base or Acid-based processing: Coating, Etching, Developing, Rinsing-Drying, Thin Filming and Cleaning. This device is recommended for single-use only.</p>
<p>Gallenkamp Box Furnace FSL-340-110w</p> <p>* This equipment is used by: Faculty of Science -Department of Physics -Department of Chemistry</p>	<p>This furnace and oven is suitable for materials research, sintering & firing of ceramics, crystal growing, and general heat treatment of several materials including steel, semiconductors, superconductors, nonmaterials, organic and inorganic samples.</p>
<p>Planetary Ball Mill PM 100-RETSCH</p> <p>* This equipment is used by: Faculty of Science -Department of Physics -Department of Chemistry Faculty of Engineering Faculty of Pharmacy Faculty of Medicine</p>	<p>Planetary Ball Mills are used wherever the highest degree of fineness is required. They are used for pulverizing, mixing, homogenizing, colloidal milling and mechanical alloying in agriculture, biology, chemistry, construction materials, engineering, electronics, environment, recycling, geology, metallurgy, glass, ceramics, medicine and pharmaceuticals.</p>
<p>Heated Ultrasonic Bath-H (9 L)</p> <p>* This equipment is used by: Faculty of Science -Department of Physics -Department of Chemistry Faculty of Engineering Faculty of Pharmacy Faculty of Medicine</p>	<p>This device is used for the acceleration of chemical reactions, degassing of liquids, cell disruption, cleaning of sieves, pipettes, micro-pipettes, curettes, trays, viscometers, decomposition of radioactive substances, as well as in cleaning of prosthesis instruments.</p>

Equipment Available	Scope of Utilization
<p>Motorized Tension / Compression Test Stand ESM303</p> <p>* This equipment is used by: Faculty of Science -Department of Physics -Department of Chemistry -Department of Biological Sciences Faculty of Engineering Faculty of Dentistry Faculty of Medicine</p>	<p>This device performs a wide range of tests including break testing, cycling, limit testing to a load or distance, load holding, elongation testing, tensile testing, compression testing, and more.</p>
<p>KJ-1200G Laboratory Tube Furnace</p> <p>* This equipment is used by: Faculty of Science -Department of Physics -Department of Chemistry</p>	<p>This equipment is highly suited to materials science research fields such as: crystal growing, general heat treatment of several materials including nano-materials, organic and inorganic samples, sintering and firing of ceramics and many other areas of research. It can be used for heating reactions and chemicals at high temperatures, up to 1200 °C.</p>
<p>Thermoelectric Power Measurements (Home-Made)</p> <p>* This equipment is used by: Faculty of Science -Department of Physics Faculty of Engineering</p>	<p>The studies of thermo-power of high-temperature superconductors provide important information about the scattering mechanism, band gaps, the nature of the charge carriers, the electronic transport properties and explain the significant changes in the carrier concentration or oxygen content.</p>
<p>Muffle Furnaces with Brick Insulation (Nabertherm)</p> <p>* This equipment is used by: Faculty of Science -Department of Physics -Department of Chemistry</p>	<p>This equipment is highly suited to materials science research fields such as: crystal growing, general heat treatment of several materials including nano-materials, organic and inorganic samples, sintering and firing of ceramics. In general, it can be used for heating reactions and chemicals at high temperatures, up to 1300 °C.</p>

*All the abovementioned equipment is in good condition.

Faculty of Pharmacy



Pharmaceutical Technology Research Laboratory

Location:
Beirut Campus, Hariri Building
1st Floor, Room 113

Equipment Available	Scope of Utilization
Digital Viscometer Brookfield DV	This device is used for the determination of viscosity for liquids and semisolid preparations.
High Speed homogenizer	This device is used for mixing, deaggregation and emulsification of liquid mixtures.
Lab Plant Spray Dryer	This device is used for the formation of dry products from liquid feed at different temperatures.
Mechanical Stirrer	The stirrer is used for mixing liquids and solids.
Sonicator	This device is used for mixing, dissolution and solubilization of solids and liquids.
Zetasizer, Nanoseries	This device is used for the determination of particle size in the nanometric range and zeta potential.
Shaking Water-Bath	This device is used for dissolution and solubilization of solids and liquids.
Centrifuge 3-30ks	This equipment is used for separation of insoluble solids and colloids under different temperatures.

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Science
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Pharmacology Research Laboratory

Location:
Beirut Campus, Hariri Building
1st Floor, Room 118

Equipment Available	Scope of Utilization
PolyView ,Compact Transducer Amplifier with Pressure Transducer and Interface Cable	These devices is used for measurement of force and pressure.
Grass Stimulator	
Animal Balance	This device is used for determination of the mouse or rat weight.
Single Heated Tissue Bath	This device is used to maintain the temperature of tissues.
MS Multi-peristaltic Pump	This device is used to control the rate of infusion.
Western Blot	This is used as a technique in cell and molecular biology.
Tail Flick	These devices are used for the determination of analgesic activities.
Hot Plate	
Rota Rod Treadmill for Rats	This equipment is used for the measurement of muscle strength.
Plethysmometer	This devise is used for the measurement of volume of edema in animals.

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Science
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Microbiology Research Laboratory

Location:
Beirut Campus, Hariri Building
1st Floor, Room 122

Equipment Available	Scope of Utilization
Laminar Flow	This is an aseptic area for growing bacteria.
Autoclave	This device is used for the preparation of sterilized media.
Incubator	The incubator is used for growing bacteria at adjusted temperatures.
Shaker Incubator	This device is used for growing bacteria at adjusted temperatures under a controlled rate of shaking.
Electrophoresis	This equipment is used for molecular diagnostics for running PCR products.
UV Illuminator	This device is used for visualization of PCR products.
PCR Cycler	This device is used for molecular diagnostics for carrying out PCR reactions.
Microscope	This equipment is used for visualization of bacterial cells.

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Dentistry

*All the abovementioned equipment is in good condition.

Phytochemistry Research and Pharmaceutical Chemistry Research Laboratory

Location:
Beirut Campus, Hariri Building
2nd Floor, Rooms 213 - 214

Equipment Available	Scope of Utilization
Rota Vapour	This device is used for drying of heat-sensitive biological materials.
HPLC	This device is used for analysis of pure samples.
Ultra Centrifuge	This equipment is used for mixing of solutions.

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Science
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Drug Quality Control Laboratory

Location:
Beirut Campus, Hariri Building,
Floor B1, Room 1231

Equipment Available

Moisture Balance

HPLC PU-2089

Spectrophotometer

Scope of Utilization

This device is used for determination of moisture content in solids.

These devices are used for the determination of drug concentration.

*All the abovementioned equipment is used by:
Faculty of Pharmacy - Center for Consultation

*All the abovementioned equipment is in good condition.

DQC Laboratory

Location:
Beirut Campus, Hariri Building
1st Floor, Room 124

Equipment Available	Scope of Utilization
HPLC	This device is used for analysis of compounds and drugs.
Dissolution Apparatus	This device is used for analysis of drugs.
GC-MS	These devices are used for analysis of volatile compounds and drugs.
ELISA	
UV-VIS Spectrophotometer	
Spectrofluorometer	

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Science
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Biochemistry Laboratory

Location:
Beirut Campus, Hariri Building
1st Floor, Rooms 111-112

Equipment Available

Calorimeter

PCR

Scope of Utilization

This device measures the absorbance of colored solutions.

This device is used in the field of molecular biology.

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Dentistry
Faculty of Science
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Instrumental Analysis Laboratory

Location:
Beirut Campus, Hariri Building
1st Floor, Room 114

Equipment Available	Scope of Utilization
Flame Photometer Spectrophotometer (UV-VIS)	These devices are used for analysis of compounds and drugs.
Polarimeter Automatic Polarimeter	These devices are used for measuring angle of rotation of compounds.
Fluorometer	This device is used for analysis of compounds and drugs.
Conductometer	This equipment is used for measuring conductance of solutions.
Refractometer	This equipment is used for measuring the refractive index of solutions.

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Science
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Pharmaceutical Organic Laboratory

Location:
Beirut Campus, Hariri Building
1st Floor, Room 105

Equipment Available

Spectrophotometer

Scope of Utilization

This device is used in chemical analysis.

*The abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Science
Faculty of Health Sciences

*The abovementioned equipment is in good condition.

Pharmacology Laboratory

Location:
Beirut Campus, Hariri Building
12th Floor, Room 1201

Equipment Available

Single Tissue Bath

Kymograph Universal Model

Scope of Utilization

This bath is used for maintaining a suitable environment for animal tissues.

This device is used for the determination of animal tissue response.

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Health Sciences

*All the abovementioned equipment is in good condition.

Microbiology Laboratory

Location:
Beirut Campus, Hariri Building,
Ground Floor, Rooms 11 - 12

Equipment Available	Scope of Utilization
Test Tube Vortex	A vortex is used for mixing.
Autoclave	This device is used for the preparation of sterilized media.
Incubator	The incubator is used for growing bacteria at adjusted temperatures.

*All the abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Dentistry

*All the abovementioned equipment is in good condition.

Pharmacognosy Laboratory

Location:
Beirut Campus, Hariri Building
2nd Floor, Rooms 213 - 214

Equipment Available

UV Lamp

Scope of Utilization

This lamp is used for TLC-Thin Layer Chromatography identification.

*The abovementioned equipment is used by:
Faculty of Pharmacy
Faculty of Science
Faculty of Health Sciences

*The abovementioned equipment is in good condition.

Pharmaceutical Technology Laboratory

Location:
Beirut Campus, Hariri Building
Floor B1, Room 1231

Equipment Available	Scope of Utilization
Disintegrator	This equipment is used to determine the disintegration time of tablets.
Dissolution	This equipment is used to determine the dissolution profile of solid and semi-solid dosage forms.
Friabilator	This equipment is used to determine the percentage friability of tablets.
Moisture Balance	This equipment is used to determine the percentage moisture in a pharmaceutical powder.
Suppository Hardness Tester	This device is used to measure the load under which suppositories break.
Tablet Hardness Tester	This device is used to measure the load under which tablets break.
*The abovementioned equipment are used by: Faculty of Pharmacy - Drug Quality Control	
Coating Pan	This device is used in sugar coating and film coating of tablets.
Granulator Dry	This device is used in the formation of dry granules.
Granulator Oscillator	This device is used to sieve dry granules.
Homogenizer	This device is used to make dispersions and emulsions.
Kneader	This equipment is used for mixing and kneading of ointments, pastes and semi solid preparations.
Mixer Double Cone	This device is used in the homogenous mixing of powders.
Pelletizer	This device is used in the preparation of pellets.
Polishing Drum	This equipment polishes coated tablets.

Equipment Available	Scope of Utilization
Suppository Machine	This equipment is used in the preparation of suppositories.
Suppository Melting Tester	This device measures the melting point of suppository samples.
Tablet Machine	This equipment is used for the compression of powders into tablets.
Three Roller Mill	This device is used to finely disperse, mix, refine or homogenize semi solid preparations (ointments, pastes).

*The abovementioned equipment are used by:
Faculty of Pharmacy
Faculty of Science
Faculty of Health Sciences

Faculty of Medicine



Medical Research Laboratory

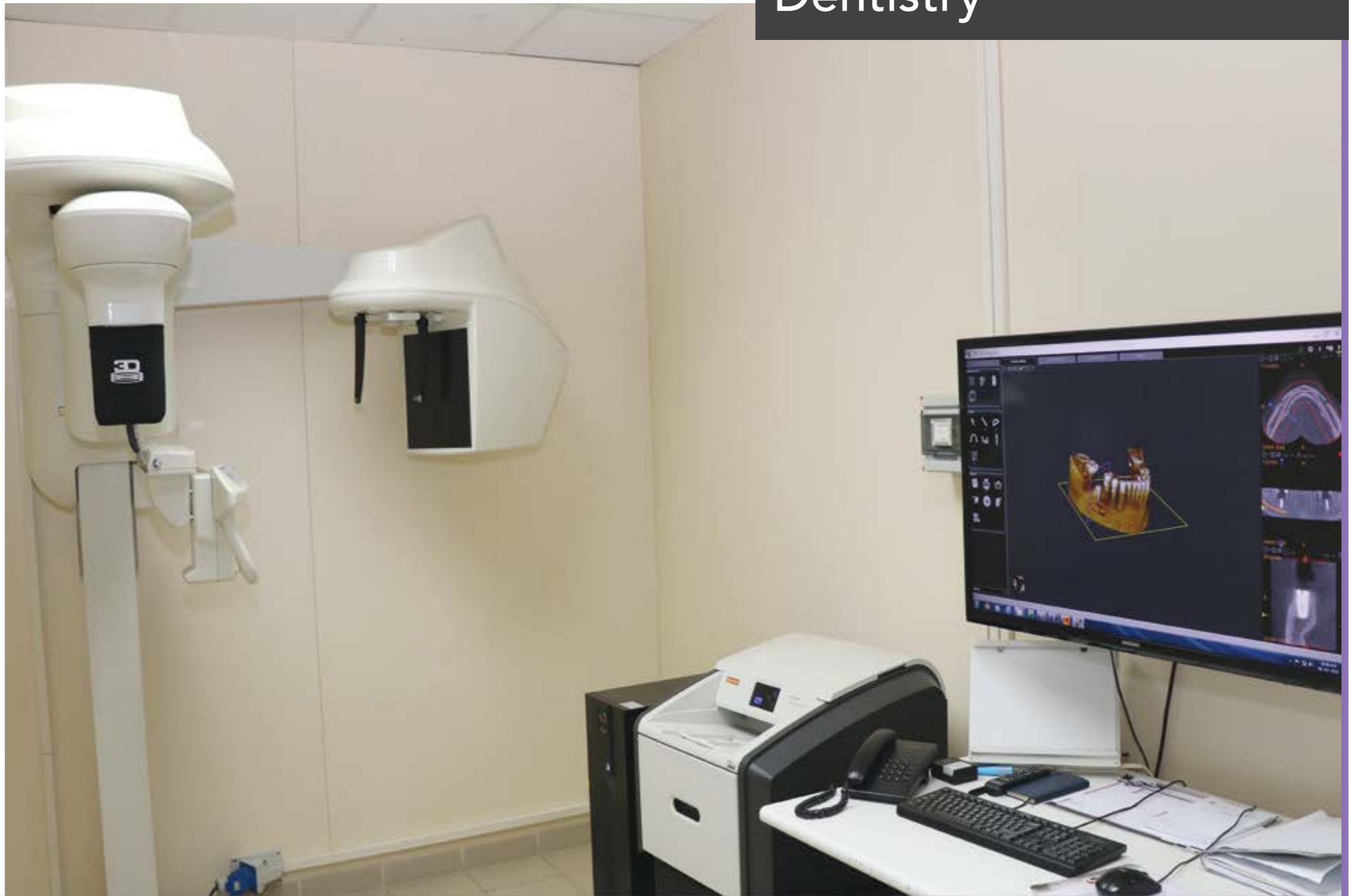
Location:
Beirut Campus, Hariri Building
3rd Floor, Room 317

Equipment Available	Scope of Utilization
Balance	These devices are used for experimentation in the field of Molecular and Cellular Biology.
Analytic Balance	
Dry Bath	
Heat plate	
Rocker	
Shaker	
pH Meter	
Vortex	
Bonchtop Centrifuge	
Micro-Centrifuge	
Inverted Microscope with Camera	
Incubator/Oven	
Spectrophotometer	
UV Reader	
DNA Electrophoresis system	
PCR Hood	
Protein Electrophoresis and WB System	
Cell Culture Hood	
CO ₂ Cell Incubator	
Fridge/Freezer	

*All the abovementioned equipment is used by:
Faculty of Medicine
Faculty of Pharmacy
Faculty of Dentistry
Faculty of Health Sciences
Faculty of Science

*All the abovementioned equipment is new.

Faculty of Dentistry



Speciality Clinics 1&2

Location:
Beirut Campus, Main Building
2nd Floor, Rooms 250 & 243

Equipment Available

Surgical Operating Microscope

Scope of Utilization

This equipment is designed to be used in a dental surgical setting, typically to perform microsurgery.

*The abovementioned equipment is used by:
Faculty of Dentistry

*The abovementioned equipment is in excellent condition.

X-Ray Room

Location:
Beirut Campus, Main Building
1st Floor, Room 146

Equipment Available

Cone Beam Computed
Tomography X-Ray

Carestream 9000 3D CBCT
(Software)

Scope of Utilization

This is intended to produce panoramic and cephalometric x-ray imaging. In addition, the system includes a dental volumetric reconstruction mode to produce three dimensional x-ray images of the dento-maxillo-facial region.

A comprehensive dental imaging software. Its 3D module is versatile, easy to use, and effective, integrating all the essential functions: measurement, multiplanar review, 3D volume review, and orthogonal viewing to name.

*All the abovementioned equipment is used by:
Faculty of Dentistry

*All the abovementioned equipment is in excellent condition.

Speciality Clinics 1

Location:
Beirut Campus, Main Building
2nd Floor, Room 250

Equipment Available	Scope of Utilization
DIAGNOdent Hand-held Caries Detection Pen	This is used to enhance early identification of caries and diagnosis based on the favorable reproducibility of its values for detecting the development of lesions in regular examinations.
Oral ID Cancer Screening	This equipment is used to identify oral abnormalities at an earlier stage compared to other oral cancer screening methods. It accomplishes this through the use of leading edge fluorescence technology to screen for oral cancer, without the need for rinses, dyes, or use of invasive instruments.
Mectron Piezosurgery Device	This device overcomes the precision and safety limitations of traditional instruments. This technique is based on the use of microvibrations generated by an ultrasonic device.
Biolase EPIC DIODE 940nm Dental Laser System	These devices are used for incision, excision, vaporization, ablation and coagulation of oral soft tissues including marginal and interdental gingival and epithelial lining of free gingiva.
AMD Picasso lite Soft Tissue Laser	
Sirolaser	
PRF Centrifuge Machine	PRF has the advantage over PRP [Platelet Rich Plasma]. It is designed for using 6 PRF protocols and uses tube balancing simplified by the color code.
Osstell ISQ Device	This device is used to determine implant stability and to assess the progress of osseointegration without jeopardizing the healing process.
Periotest	This device is used in the following ways: <ul style="list-style-type: none"> - Implants: Assessment of the osseointegration of dental Implants, - Natural teeth: Diagnosis and Assessment of periodontopathies, - Assessment of the occlusal load and control of the treatment's progress

*All the abovementioned equipment is used by:
Faculty of Dentistry

*All the abovementioned equipment is in excellent condition.

Phantom Laboratory

Location:
Beirut Campus, Main Building
Ground Floor, Room 13

Equipment Available

Light Microscope Olympus
(CX21)

Scope of Utilization

This device reaches new heights in image color, contrast, clarity and focus delivering flat, sharp images utilizing the infinity-corrected Plan Achromat technology.

*The abovementioned equipment is used by:
Faculty of Dentistry

*The abovementioned equipment is in excellent condition.

Faculty of Health Sciences



Physical Therapy Outpatient Clinics

Location:
Beirut Campus, Hariri Building
5th Floor, Room 507

Equipment Available

Biopac System

*This equipment is used by:
Faculty of Health Sciences
- Department of Physical Therapy
Faculty of Medicine
Faculty of Dentistry
Faculty of Pharmacy

Digital Hand Dynamometer

Push-Pull Dynamometer

Digital Pinch Gauge

Cervical ROM Inclinometer

*The abovementioned equipment are
used by:
Faculty of Health Sciences
- Department of Physical Therapy

Scope of Utilization

This is a data acquisition system for muscle activity, ROM, and weight bearing pressure.

These devices are used for digital recording of muscle strength

This equipment measures cervical ROM.

*The Digital Hand Dynamometer is functioning as a hardware device (corrupted software); all the other equipment is in good condition.

Biomedical Laboratory

Location:
Beirut Campus, Hariri Building
6th Floor, Room 602

Equipment Available	Scope of Utilization
Nucleic Acid Analyzer AE-Nano200; A&E Lab	This device is used for DNA quantification.
Thermal Cycler CF-G9677 – Coyote Bioscience Company	This device is used for DNA amplification.
DNA Electrophoresis Set – Enduro	This device is used for DNA revelation.
ELISA Reader Multiskan, ThermoFisher	This device is used for protein quantification.

*All the abovementioned equipment is used by:
Faculty of Health Sciences - Department of Medical Laboratory Technology

* The Nucleic Acid Analyzer AE-Nano200 is not giving reliable results; all the other equipment is in good condition.

Nursing Simulation Laboratory

Location:
Beirut Campus, Hariri Building
5th Floor, Room 511

Equipment Available

ECG machines

Scope of Utilization

This is an Electrocardiography machine.

*The abovementioned equipment is used by:
Faculty of Medicine

*The abovementioned equipment is in good condition.

Nutrition and Dietetics Laboratory and Clinic

Location:
Beirut Campus, Hariri Building
6th Floor, Room 612

Equipment Available	Scope of Utilization
In Body 17, Biospace	This equipment is used to determine body composition status.
TANITA MC-780 MA	This equipment is a Body Composition Analyzer.

*All the abovementioned equipment is used by:
Faculty of Health Sciences - Department of Nutrition and Dietetics

*All the abovementioned equipment is in good condition.