



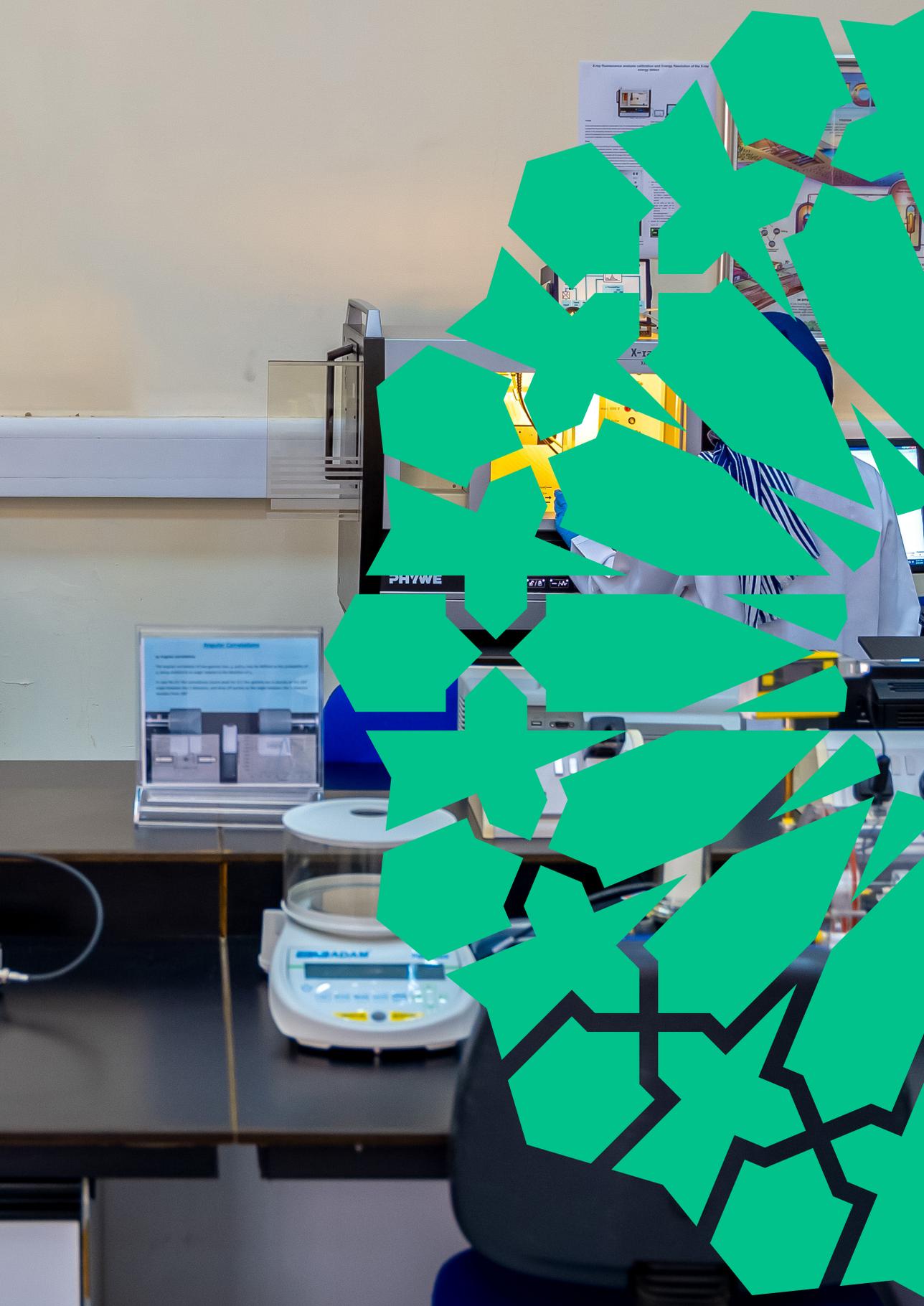
CAUTION
X-RAY
CAUTION

PHYWE

X-ray
PHYWE
XR 401

CAMERA'S

COLLEGE OF ENGINEERING



X-ray fluorescence analysis: calibration and energy resolution of the X-ray energy detector



The diagram shows an X-ray tube on the left emitting X-rays towards a sample. The sample is placed on a goniometer. The diffracted X-rays are captured by a detector. The diagram illustrates the geometry of the X-ray tube, the sample, and the detector, along with the resulting diffraction pattern.

Sample Correction

An important correction factor is the sample thickness. The X-ray penetration depth is dependent on the X-ray energy and the absorption coefficient of the sample. The sample thickness must be chosen such that the X-ray penetration depth is at least 10 times the sample thickness. This ensures that the X-ray intensity is constant throughout the sample.



The screenshot shows a software interface with several input fields and a 'Calculate' button. The fields are labeled 'Sample thickness', 'X-ray energy', and 'Absorption coefficient'. The 'Calculate' button is highlighted in blue.

PHYWE

BRÜAUN



The image shows a digital scale with a white weighing pan. The scale has a digital display and several buttons. The brand name 'BRÜAUN' is visible on the front of the scale.

ARCHITECTURAL ENGINEERING DEPARTMENT

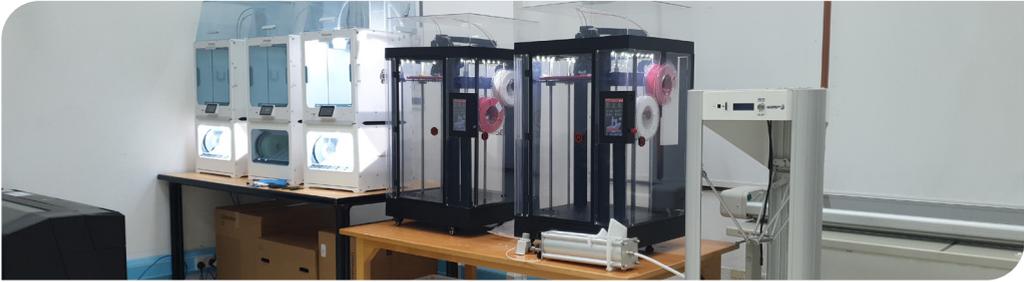
Architectural Engineering Laboratories

Lab Name	Location	Person in Charge	Programs Served	Courses Served
Modeler and Printing Lab	M8-004	- Osama A. Hassan - Gene A. Soriano	Architectural Engineering	- Architectural Design Courses - Senior Design Projects - Department Electives - Department workshops
Surveying Lab	W12-019	Farah Al Ani	Architectural Engineering	- Surveying - Building Construction - Drawing Courses
Architectural and Building Sciences Lab	M8-005	- Prof. Abbas Elmualim - Dr. Emad Mushtaha - Lamees Hamid	Architectural Engineering	- Architectural Design Courses - Building Construction - Illumination and Acoustics - Department Electives

Architectural Engineering Lab Staff

#	Name	Title	Ext.	Email
1	Osama Atwa Hassan	Laboratory Engineer	065052891	ohassan@sharjah.ac.ae
2	Lamees Hamid	Laboratory Engineer	065052985	lhamid@sharjah.ac.ae
3	Farah Muwafaq Al-Ani	Laboratory Engineer	065052988	falani@sharjah.ac.ae
4	Gene Anthony Soriano	Laboratory Officer	065052991	gsoriano@sharjah.ac.ae

MODELER AND PRINTING LABORATORY



Location	Lab Staff in Charge	Contacts
M8-004	Osama A. Hassan	065052891
	Gene A. Soriano	065052277

INTRODUCTION

The Modeler and Printing Lab in the Architectural Engineering Department is equipped with state-of-the-art model making and Architectural design printing equipment, with a variety of new advanced equipment and services provided to the students, this includes Investigation of materials, prototyping and testing, physical mock-ups and the application of traditional and new fabrication processes in Architecture model making and research applications.

The lab works as All-in-One workshop with all the needed equipment for the students and faculty required applications in teaching and research, including large size digital printing, 3D printing (FDM, Resin, Clay and Concrete), 3D scanning, laser cutting (Plastics, wood and metal), Foam cutting, wood works and spray painting. The Lab structured as an open environment for material-based learning and research, using a wide range of materials including foam, wood, metal, plastics, clay and concrete as well as composite of smart materials.

Students and faculty of Architectural Engineering department and all programs of engineering design studies at the University of Sharjah produce scale models and full-size prototypes, real scale installations and pavilions in general.

EQUIPMENT AND INSTRUMENTS

- Universal Laser Systems- VLS6.6 Laser cutter (wood, plastic, and paper)
- BOSSLASER – HP 3655 Laser Cutter (wood, plastic, paper, and metal)
- Photocentric LC MAGNA Resin 3D printer – Large Scale HQ
- 3 x Ultimaker S5 3D Printer – Pro Set (Material station & Air manager)- (FDM plastics)
- 2 x Raise3D Pro2 Plus 3D Printer- Large scale- (FDM plastics)
- DELTA WASP 60100 3D Printer – Large scale (FDM plastics and Clay & Concrete)
- DELTA WASP 2040 3D Printer – (Clay & Concrete)
- Ultimaker 3 Extended 3D printer- (FDM plastics)

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- Zortrax M300 3D Printer- (FDM plastics)
 - 2x HP DesignJet T1500- 2x HP DesignJet T2500
 - 5x Dremel 4200 Rotary tools set
 - 5x Dremel Moto-Saw – Fine wood works
 - 12x STYRO-CUT 3D Foam cutter Professional Set
 - Clarke 280 Hot Wire Cutter – Large scale
 - California Air Tools silent compressor – Spray kit
 - Matterport Pro 2 (3D Camera Capture)

TESTS AND SERVICES

- Black &White All size printing, Colored posters printing.
- 3D printing small, medium, and large size models (FDM, Resin, Clay)
- Laser Cutting boards for model making (Acrylic plastic, foam, chipboards, wood, metal)
- Foam Heated Wire Cutting
- Fine woodworks (cutting, sanding, painting)

SURVEYING LABORATORY



Location	Lab Staff in Charge	Contacts
W12-019	Priya Kaimal	065053498
	Farah Al Ani	065052988

INTRODUCTION

The Surveying Laboratory in the AE Department is equipped with state-of-the-art surveying equipment and serves to acquaint students with hands-on experience in diverse aspects of land surveying and construction surveying. The lab sessions carried out in the surveying lab expose students to the principles of land survey as they familiarize themselves with the following:

- Use of Tapes and Electronic Distance Measurements (EDM) to Obtain Precise Linear Measurement.
- Use of Automatic Level to Determine Elevations and Establish Contour Lines.
- Use of Total Station to Obtain Horizontal, Vertical, and Angular Measurements and Perform Traverse Computations.
- Use of Different Measuring Tools to Obtain As-Built Measurements of Existing Facilities and Sketch Sections, Elevations and Perspective View from Data Collected on Ground.

The surveying lab is also serving other courses in the Architectural Engineering curriculum namely, Building Construction I & II and Architectural Drawing I & II, where students and faculty borrow measuring tools to collect accurate and precise dimensions.

EQUIPMENT AND INSTRUMENTS

- NIKON DTM Electronic Total Station
- 2x GEOMAX ZTS-605 Reflector less Long-Range Total Station
- 5x SOKKIA B40-35 Automatic Level
- 5x BOSI TOOLS Posture Steel Tape 50M
- 5x Total Station Reflectors
- 5x 5m Leveling Staff
- 4x BOCH Electronic Laser measurement Device

ARCHITECTURE AND BUILDING SCIENCES LABORATORY



Location	Lab Staff in Charge	Contacts
M8-005	Prof. Abbas Elmualim	065052980
	Dr. Emad S. N. Mushtaha	065052814
	Lamees A. Hamid	065052985

INTRODUCTION

The Architectural and Building Sciences Laboratory facilitates research study of the surrounding environment including the buildings and the students. It allows students to do research on scientific and engineering approaches to improve the quality of the buildings and design a sustainable environment. The Laboratory used for experimentation, classroom demonstrations and teaching exercises that linked with building science courses.

The Lab has portable equipment for analyzing data from experiments in the field as well as in the laboratory. This equipment includes instruments to measure the ventilation in the buildings, as well as portable instrumentation for measuring the detailed thermal and luminous characteristics of building interiors (thermometry, low-speed anemometry, and sensors for humidity).

EQUIPMENT AND INSTRUMENTS

- ADVANCEDSENSE DIRECTSENSE IAQ Indoor Air Quality Meters Full Set
- CO2 Concentration meter
- 10x LS-100 Luminance Meter
- 2x Humidity Sensor/ Data Logger