

## Research Facilities at AAU

### Does Al Ain University provide specific physical facilities for interdisciplinary research teams?

Al Ain University in the UAE recognizes the significance of interdisciplinary research, and has established research centers and institutes that bring together scholars and researchers from different academic disciplines. These centers and institutes are equipped with essential infrastructure, including physical facilities, to support their work in promoting interdisciplinary research and addressing regional and global challenges.

Providing physical facilities for research teams is a top priority at AAU, as these facilities play a crucial role in promoting collaboration, knowledge sharing, and innovation among researchers from different disciplines. By working in the same space, researchers can easily share ideas, knowledge, and resources, leading to a more productive and efficient research process.

Moreover, physical facilities provide access to specialized equipment and resources that may not be available in individual labs or departments. This can reduce costs and increase efficiency, allowing interdisciplinary research teams to work more effectively on complex problems that require a diverse range of skills and knowledge.

Overall, AAU's commitment to providing physical facilities for research teams demonstrates the university's dedication to supporting interdisciplinary research and addressing regional and global challenges through collaboration and innovation.

### Facilities

#### ➤ College of Engineering: [1]

- **Computer Labs:** This lab is dedicated to meet the teaching and learning needs of faculty members, students and research groups.

#### **Installed softwares:**

- ✓ MS Project
- ✓ MS Visio
- ✓ Visual Studio
- ✓ NetBeans IDE
- ✓ JGrasp
- ✓ NetBeans IDE
- ✓ Cisco Packet Tracer
- ✓ AutoCAD
- ✓ Eclipse
- ✓ UML Lab
- ✓ Oracle JInitiator
- ✓ Notepad++

- ✓ XAMPP
- ✓ IBM Rational Rose

- **Physics Lab**

**Equipment and Instruments:**

- ✓ Digital Analog Training System ETS-7000
- ✓ Inductor various values
- ✓ Micrometer Caliper
- ✓ Stainless Steel Digital Vernier Caliper
- ✓ Free-Fall Apparatus
- ✓ Adam scale (adam scales ACB plus- 600H)
- ✓ Force Table
- ✓ Hooke's law apparatus complete
- ✓ Rheostat
- ✓ Inclined plane & friction board
- ✓ Galvanometer
- ✓ Potentiometer Two wire with jockey
- ✓ Van Graff Motor Driven
- ✓ Demonstration induction Coil
- ✓ Calorimeter Aluminum
- ✓ Pulley large with universal Clamp
- ✓ Resistance box single dial
- ✓ Pendulum bob
- ✓ Capacitance Substitution Box
- ✓ Plug Switch Two way
- ✓ Decade resistance box
- ✓ Triple DC POWER Supply
- ✓ Digital Multi-meter
- ✓ Analog Multi-meter
- ✓ Induced Current Apparatus
- ✓ Knife Switch
- ✓ Timer (IEC)
- ✓ Freefall apparatus timer
- ✓ Circular Motion Kit
- ✓ Projectile Kit
- ✓ Resistors various values
- ✓ Capacitor various values

- **Electronic Lab**

**Equipment and Instruments**

- ✓ Digital Analog Trainer System
- ✓ Electrical & Electronic System Trainer Model- XPO-CT Maste
- ✓ Digital Storage Oscilloscope
- ✓ Digital function generator

- ✓ Digital Spectrum analyzer
- ✓ Digital Multi-Meter
- ✓ Advance DC to DC Converter Panel
- ✓ OP AMP Parameter Measurement panel
- ✓ JEET, MOSFET & IGBT Panel
- ✓ Switch Mode power supply Panel
- ✓ Application of OP-AMP Experimental Panel
- ✓ Rectifier / Filter experiment panel
- ✓ Transistor panel for FET amplifier, differential amplifier, Push-Pull amplifier, turned RF amplifier, RC coupled amplifier
- ✓ Multi-vibrator & Oscillator Experiment Panel
- ✓ Rectifier / Filter panel
- ✓ RF Filter Module: Passive/ Active/ M Derived Filter Panel
- ✓ Transistor panel for H parameters, Thermal stability, CB/CC/CE
- ✓ Digital IC Tester
- ✓ Logic gates IC's
- ✓ Resistive, Inductive and Capacitive Power Loads
- ✓ Bread boards
- ✓ The KL-200 Linear Circuit Lab

- **Network Lab**

**Equipment and Instruments**

The lab consists of the following hardware and software required to meet the above objectives

**Hardware**

- ✓ Cisco 1941 router
- ✓ Cisco catalyst 2950 Switch
- ✓ Cables and RJ-45 Connectors
- ✓ Modular crimping Tool
- ✓ Cable tester
- ✓ 24 PC's
- ✓ Network Cable
- ✓ TP-Link (Wireless Router)
- ✓ Console USB Cable
- ✓ Network analysis tablet
- ✓ 42U Rack Cabinet, Power Extensions & Fans

**Software**

- ✓ Labview
- ✓ Matlab R2020b
- ✓ JGrasp
- ✓ LTSpice
- ✓ Packet Tracer
- ✓ Wire Shark

- ✓ Putty
- ✓ Logisim
- ✓ GNS3 1.5.3

- **Communication lab**

**Equipment and Instruments**

- ✓ Master Unit Communication System Training (XPO-COM)
- ✓ FM Modulator and Demodulator panel
- ✓ ASK, FSK, PSK Modulator/Demodulator panel
- ✓ PCM Modulator/ Demodulator panel
- ✓ AM, DSB-SCC SSB Modulator/ Demodulator panel
- ✓ Digital Storage Oscilloscope
- ✓ Digital function generator
- ✓ Spectrum analyzer Digital SA2018
- ✓ Frequency Counters

- **Embedded Lab**

**Equipment and Instruments**

**Hardware**

- ✓ 24 PC's
- ✓ FPGA 3S 400
- ✓ Altera DE1 Development and Educational Board.
- ✓ TL866 universal programmer
- ✓ Digital Circuit Board
- ✓ Spartan-3E Starter Board
- ✓ Virtex-II PRO (V2-Pro) development system

**Software**

- ✓ emu8086 software
- ✓ Quartus Prime Pro 18.0

**Civil Engineering Labs**

- **Materials Lab**

**Equipment**

- ✓ Fully Automatic 3000kN Compression Machine for Testing Cubes and Cylinders
- ✓ Compression Frame Jig Assembly
- ✓ Flexural Testing Machine with 100 kN Capacity for Testing Beams, Kerbs & Flagstone
- ✓ Splitting Test set
- ✓ Concrete Mixer (Drum Type)
- ✓ Concrete Mixer (Pan Type)
- ✓ Drying Oven
- ✓ Specific Gravity Test Set
- ✓ Full set of ASTM Woven Wire Mesh Sieves (Coarse & Fine) and Sieve Shaker

- ✓ Vicat Test Set
- ✓ Slump Test Set
- ✓ Air Entrainment Meter
- ✓ Cement Mortar Mixer
- ✓ Schmidt Hammer
- ✓ Vibrating Table
- ✓ Concrete Cubic and Cylinder molds
- ✓ Beam Molds
- ✓ Curing Tank with Thermostat Controlled Heater

- **Geotechnical Engineering Lab**

**Equipment**

- ✓ Fully Automated Triaxial system
- ✓ Consolidation test full set
- ✓ Digital Direct/Residual Shear Apparatus complete with lever loading assembly
- ✓ Falling Head Permeability Test Set.
- ✓ Constant Head Permeability Test Set.
- ✓ Shrinkage Limit Test Set
- ✓ Liquid Limit Device
- ✓ Plastic Limit Test Set.
- ✓ Full set of ASTM Woven Wire Mesh Sieves (Coarse & Fine) and Sieve Shaker
- ✓ Soil Drying Oven
- ✓ CBR & Marshall Testing Machine with Load Ring
- ✓ Marshall- CBR Universal Sample Extruder
- ✓ Sand Pouring Apparatus, BS
- ✓ Sand Density Cone Set, ASTM
- ✓ Standard Proctor compaction test
- ✓ Modified Proctor compaction test
- ✓ Automatic Soil Compactor, ASTM
- ✓ Hydrometer Test Set.
- ✓ Speedy Moisture Tester
- ✓ Cement Mortar Mixer
- ✓ Riffle Boxes
- ✓ X`

- **Fluid Mechanics and Hydraulics Lab**

**Equipment**

- ✓ Hydrostatics and Properties of Fluids Bench
- ✓ Flow Measurement Apparatus
- ✓ Impact of Jets Apparatus
- ✓ Bernoulli's Theorem Apparatus
- ✓ Reynolds Number and Transitional Flow Apparatus
- ✓ 2.5 Meter Flow Channel

- ✓ Fluid Friction Apparatus
- ✓ Digital Hydraulic Bench
- ✓ Variable Series And Parallel Centrifugal Pump Set

- **Surveying Lab**

**Equipment**

- ✓ Total Station
- ✓ Optical and Laser Theodolites
- ✓ Automatic Level
- ✓ Rotating Laser Level
- ✓ GRX2 GNSS System-Rover Kit : (GPS + GLONASS)
  - GRX2 GNSS Receiver
  - Rover: GRX2 with Internal Digital UHF
- ✓ Tripods, wooden and aluminum
- ✓ Leveling Rods
- ✓ Odometer Wheels
- ✓ Measuring tapes
- ✓ Ranging Poles

➤ **College of Pharmacy [2]**

- **Pharmaceutical Analysis Laboratory:**

The laboratory is equipped with:

- ✓ Number of electronic analytical balances- 1
- ✓ Number of electronic top loading analytical balances. -3
- ✓ hot plates and magnetic stirrer -1
- ✓ different types of water baths-2
- ✓ Spectrophotometers-1
- ✓ Polarimeters -2
- ✓ A hot air oven. -1 (Muffle furnace)
- ✓ A pH meter. – 6 + 2( Electronic)
- ✓ Desiccators -1
- ✓ Sonicator -1
- ✓ All types of glass apparatus and chemicals needed for quantitative and qualitative analysis.
- ✓ Fume hood-1
- ✓ Heating Mantles-8

- **Chemistry & Biochemistry Laboratory:**

The laboratory is equipped with:

- ✓ Number of electronic analytical balances -2
- ✓ Number of hot plates -1
- ✓ Heating mantels -4
- ✓ Vacuum filtration pump -2
- ✓ Water baths. -1

- ✓ An Ice maker-1
- ✓ Desiccators-1
- ✓ Distillators- 2
- ✓ Distilled water assembly-1
- ✓ Melting point apparatus-1
- ✓ Fume hood -1
- ✓ Electrophoresis-1

- **Microbiology Laboratory:**

The laboratory is equipped with:

- ✓ Binocular microscopes. -8
- ✓ An incubator-2
- ✓ A hot air oven -1
- ✓ An autoclave-1
- ✓ A laminar flow-1
- ✓ A refrigerator-1
- ✓ Colony counter -2
- ✓ Various types of culturing media, Petri dishes, microbiological slides, staining baths and all chemicals and glass apparatus required to conduct microbiological testing.
- ✓ Magnetic stirrers-4
- ✓ Electronic Balance-1
- ✓ Micropipettes(different volumes)-1
- ✓ Body Fat Analyzer

- **Anatomy and Histology Laboratory**

**Laboratory Facilities:**

- ✓ Number of microscopes and explanatory slide packages for all diseases, which affect humans to conduct histological studies
- ✓ Large number of human anatomy organ models such as human anatomy model, skeleton model human, anatomical lung model, muscle anatomy model, anatomy brain model... etc. it contains also a large number of microscopic slides covers most of important organs and tissues and interactive CD's.
- ✓ Data show and overhead projector
- ✓ Microscopes- 6
- ✓ Cell Replication models-1
- ✓ Eye ball-1
- ✓ Circulatory System-1
- ✓ Reproductive systems-2

- **Pharmacognosy Laboratory:**

The laboratory is equipped with:

- ✓ Binocular microscopes-5
- ✓ A range of glassware and equipment used for the separation and identification of medical plants extracts such as separating funnels, rotary evaporators, column chromatography in addition to large number of plant samples
- ✓ A glass cupboard having jars and small containers in which different types of plant material and drugs are stored.
- ✓ Fume hood-1
- ✓ UV- Vis Spectrophotometer-1
- ✓ Water Baths-2
- ✓ Centrifuge-1
- ✓ Data show-1
- ✓ Magnetic Stir-1
- ✓ Tensiometer-1
- ✓ Distilled water Assembly-1
- ✓ Heating Mantles-12

- **Drug Information Laboratory:**

**Facilities:**

- ✓ Software and CD's to demonstrate practical and clinical cases.
- ✓ Water Bath -1
- ✓ Lab ECG
- ✓ Microscopes -3
- ✓ Fume hood-1
- ✓ Rotary Evaporator-1

- **Pharmaceutical technology Laboratory**

**Laboratory Facilities:**

- ✓ The laboratory is equipped with:
- ✓ Rotating bottle USP dissolution tester-1
- ✓ Disintegration time tester-1
- ✓ Vertex mixer-1
- ✓ Thermostatic shaker water bath-3
- ✓ Spectrophotometers -1
- ✓ PH meters1
- ✓ Tablet Punching Machine-1
- ✓ Y- Mixer-1
- ✓ Granulator-1
- ✓ Manual Filling Capsule Machine-1
- ✓ Biological Safety Cabinet-1
- ✓ Moisture Balance-1
- ✓ Stability Chamber-1



- ✓ Particle Size Analyzer (sieving)-1
- ✓ Analytical Balance -4
- ✓ Friability Tester-1
- ✓ Hardness tester-1
- ✓ Oven -1
- ✓ Tensiometer-1
- ✓ Ultrasonic Water bath-1

## References

[1] [Online]. Available: <https://engineering.aau.ac.ae/en/labs>.

[2] [Online]. Available: <https://pharmacy.aau.ac.ae/en/labs>.