



College of Applied Medical Sciences
Clinical Laboratory Sciences



Laboratory Instruments

Female Students Campus

Building (11)

Done by

Laboratory & Safety Committee







1st Edition



College of Applied Medical Sciences
Clinical Laboratory Sciences











1\ Biochemistry lab

| No. | Device | Picture | Description and applications |
|-----|---|---|---|
| 1 | Spectrophotometer Spekol 1300 Analytik jena |  | <ul style="list-style-type: none"> - Used to measure how much a chemical substance absorbs light by measuring the intensity of light as a beam of light passes through sample solution. The basic principle is that each compound absorbs or transmits light over a certain range of wavelength. - Run visible and UV lights - Max run 4 samples |
| 2 | Spectrophotometer 6405 UV/Vis. Jenway |  | <ul style="list-style-type: none"> - To measure the chemical substances absorbed UV or visible light by measuring the intensity of absorbed light - Max run 4 samples |
| 3 | Spectrophotometer PD 303 UV, APEL |  | <ul style="list-style-type: none"> - To measure the chemical substances absorbed UV or visible light by measuring the intensity of absorbed light - Max run 4 samples |
| 4 | Spectrophotometer Ultrospec II, LKB |  | <ul style="list-style-type: none"> - To measure the chemical substances absorbed UV or visible light by measuring the intensity of absorbed light - Max run 8 samples - Two lamps can use |
| 5 | Spectrophotometer Libra S22, Biochrom |  | <ul style="list-style-type: none"> - To measure the chemical substances absorbed UV or visible light by measuring the intensity of absorbed light - Max run 8 samples |
| 6 | Weighted scale, Pioneer |  | <ul style="list-style-type: none"> - Weighing, Parts Counting, Percent weighing |



College of Applied Medical Sciences
Clinical Laboratory Sciences



| | | | |
|----|--|---|--|
| 7 | Stirring hot plate, Thermix 310T |  | - Stirring hotplate, percaline, heats up very fast, and stirring the substance |
| 8 | Vortex, Labinco |  | - Use to mix the samples with different speeds |
| 9 | Dry Bath, DB006 |  | - Use to heat the samples with different sets of temperature from 25 up to 100 C |
| 10 | Water path, GFL |  | - To heat the samples with steam water Set from 25 up to 100 C |
| 11 | Flourometry, Jenway |  | - Fluorimeter model is ideal for the most sensitive determinations with emission wavelengths up to 650nm. |
| 12 | Centrifuge, Hsiangtai |  | - Centrifuge the sample to separate the component according the density |
| 13 | CO ₂ Incubator, Mettmert |  | - CO ₂ Incubator (med) - Protection for in vitro growing cell cultures, tissue cultures and bacteria cultures in a controlled and physiologically ideal environment. |
| 14 | PH meter, PH/ORP meter, Hanna |  | - Can be used for ion concentration (ISE) and Oxidation Reduction Potential (ORP) in the mV range. - Range: PH: -2.00 to 16.00pH, mV- +/- 399.9mV; +/- 2000mV - Temperature: -9.9 to 120 C |



College of Applied Medical Sciences
Clinical Laboratory Sciences







| | | | |
|----|--------------------------------|---|---|
| 15 | Water distillation, GFL |  | <ul style="list-style-type: none"> - Pure water - Used in research and development e. g. for preparing bacteriological and medical samples, for cell and tissue cultures as well as for the production of reagents and unguents. - used for cleaning and sterilization processes, for buffered solutions |
|----|--------------------------------|---|---|



College of Applied Medical Sciences
Clinical Laboratory Sciences









2\ Haematology lab

| No. | Device | Picture | Description and applications |
|-----|------------------------------------|---|---|
| 1 | Water bath |  | <ul style="list-style-type: none"> - Provides heated water of required temperature. - Necessary for reactions or experiments requiring specific temperature |
| 2 | Micro centrifuge |  | <ul style="list-style-type: none"> - Cell centrifugation; pelleting; separation by density gradients by using Eppendorf tubes to a maximum of 15000 RPM |
| 3 | Spectrophotometer |  | <ul style="list-style-type: none"> - Measure the intensity of light as a function of the colour of light; help to quantify biological molecules |
| 4 | FRI-H 18 Light-Blood Cell Counter |  | <ul style="list-style-type: none"> - Analyses blood cell parameters like WBC count, RBC count and Platelet Count |
| 5 | Olympus light binocular microscope |  | <ul style="list-style-type: none"> - Used for visualizing minute structures, including blood cells |
| 6 | Multi head microscope |  | <ul style="list-style-type: none"> - Used in medical teaching and biological teaching - They also can be used for diagnosis |



College of Applied Medical Sciences
Clinical Laboratory Sciences







| | | | |
|----|---|---|--|
| 7 | Dry Heat Oven Mettler |  | - Utilizes hot air that is either free from water vapour, or has very little of it, and where this moisture plays a minimal or no role in the process of sterilization |
| 8 | Sysmex sp-1000i automated slide preparer-strainer |  | - Fast and safe for the routines of medium and large laboratories, improving the quality of microscopic analysis in complete blood counts. |
| 9 | Biosealer CR4 |  | - For sealing PVC-tubes, especially for blood bags tubes or plasma feres sets |
| 10 | SCIOGEX DM0412 CLINICAL CENTRIFUGE |  | - For the separation of serum, plasma, urea, blood samples and other routine applications in hospital and research laboratories |
| 11 | The OHAUS Scout® Pro scale |  | -Designed for use in laboratory or education applications, features easy-to-use two-button operation, a high-contrast LCD display, multiple weighing units, four application modes, and the option of either RS232 or USB connectivity, the Scout Pro is the portable balance for your needs |
| 12 | BOECO CENTRIFUGE C-28A |  | - Used for the preparation of samples in research laboratories. |



College of Applied Medical Sciences
Clinical Laboratory Sciences






| | | | |
|----|---|---|--|
| 13 | Hettich ROTOFIX 32 A |  | - Used for the preparation of samples in research laboratories. |
| 14 | Grant QBA2 Analog Dry Block Heater |  | - Source of precision temperature control for general, routine applications and sensitive analytical procedures |
| 15 | ID- Centrifuge and incubator |  | - Incubate up to 24 ID- cards in racks at 37 °C - Silent centrifuge for up to 12 ID- cards with automatic balance control |
| 16 | CLAY ADAMS SERO- FUGE 2001 2002 CENTRIFUGE |  | - Facilitate blood testing procedures |



College of Applied Medical Sciences
Clinical Laboratory Sciences







3\ Histology lab

| No. | Device | Picture | Description and applications |
|-----|---|---|---|
| 1 | CUT 5062 Semiautomatic precision microtome |  | <ul style="list-style-type: none"> - Standard unit for paraffin sections and research-, plastic- and industrial applications. - The semiautomatic unit offers additional advantages against our manual microtomes whilst retaining all essential features of this series. - The modular design allows custom-made assemblies from a broad range of accessories. |
| 2 | CUT 4062 The manual precision microtome |  | <ul style="list-style-type: none"> - High precision specimen feed - Smoothly running hand wheel - Hand wheel lock in each position - Trimming function in 4 steps - Specimen retraction upon backstroke - Acoustic signal for end position of specimen movement - Vibration free microtome base plate - Ergonomically located coarse feed wheel - Spacious, integrated section waste tray - Wide range of accessories |
| 3 | MEV Floor standing ECO cryostat |  | <ul style="list-style-type: none"> - For extra convenience the system includes a spacious stainless steel chamber, 24 easily accessible freezing positions and well illuminated cooling chamber that can be effectively cooled down to -35 °C. - For additional user safety the system can optionally be equipped with an efficient UV-C disinfection system. - Peltier shock freezing positions (-50 °C to -55 °C) UV-C disinfection |



College of Applied Medical Sciences
Clinical Laboratory Sciences







| | | | |
|---|------------------------------------|---|---|
| 4 | MTM I & II Tissue Processor |  | <ul style="list-style-type: none"> - The MTM II fast tissue processor offers a cost-efficient and user friendly alternative for fast biopsies processing and overnight batch tissue processing needs of every histology laboratory. - The instrument can either be used for fully automated fast biopsy processing or high volume overnight batches of up to 300 samples |
| 5 | MTP Tissue Processor |  | <ul style="list-style-type: none"> - The MTP carousel tissue processor guarantees gentle and highly reliable specimen processing in conjunction with state of the art control features. - The specimen throughput can be doubled to 240 cassettes per run with a second transport basket - For faster and substantially improved processing of tissue, the instrument can optionally be equipped with vacuum units for all paraffin beakers or all positions including reagent beakers. - An integrated battery ensures highest process safety even in environments with frequent power failures. |
| 6 | MSM Robust carousel tissue stainer |  | <ul style="list-style-type: none"> - The MSM carousel stainer is designed to meet the basic requirements for routine staining in histology and cytology laboratories. The instrument is equipped with either 12 or 24 incubation system that contain up to 400ml. |
| 7 | Nikon YS100 Biological Microscope |  | <ul style="list-style-type: none"> - Objective lenses (Anti-mold) Achromat 4x, 10x, 40x, 100x oil - Illumination Halogen 6v 20w |



College of Applied Medical Sciences
Clinical Laboratory Sciences







| | | | |
|----|----------------------------|---|---|
| 8 | MWB Tissue floatation bath |  | <ul style="list-style-type: none"> - Is designed for stretching of paraffin sections in histology, research and industry laboratories - The black coated bath surface provides best contrast to identify sections and easy to clean - The highly efficient heat transfer allows low energy consumption of 300W. |
| 9 | MST Slide Warming unit |  | <ul style="list-style-type: none"> - Scratch resistant black working surface is easy to clean - Heating capacity 300W - Integrated overheat security - Digital temperature display |
| 10 | GFL Tissue Float Bath |  | <ul style="list-style-type: none"> - This special bath is preferably used for stretching and drying cut tissues in histological, pathological, chemical, clinical and bacteriological laboratories. - Very good temperature constancy of $\pm 0.5^{\circ}\text{C}$. - Exact temperature control guarantees evenly stretched cut tissues which are clearly visible in the bath. - Careful drying of the cut tissues on the warmed rim of the bath. - The low 100 mm height of the bath allows comfortable and safe working. - Bath interior made of aluminium, black anodised. - Housing made of aluminium, powder-coated. - With temperature controller and scale, main switch and two pilot lamps. - Control thermometer fixed to the rim of the bath. |
| 11 | The Leica HI1210 |  | <ul style="list-style-type: none"> - Water bath with a surface that provides high thermal conductivity rates and outstanding scratch resistance due to its special plastic coating. - Temperatures can be selected between ambient and 75°C. To increase safety and reliability the Leica HI1210 features an overheating protection system along with a stand-by mode |



College of Applied Medical Sciences
Clinical Laboratory Sciences



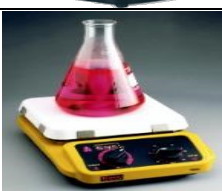






| | | | |
|----|--------------------------------------|---|--|
| | | | <ul style="list-style-type: none"> - The broad, oversized rim of the water bath allows convenient storage for microscope slides, and the rounded inner corners of the instrument allow it to be cleaned easily and efficiently. |
| 12 | Medité Tissue Flootation Bath TFB 35 |  | <ul style="list-style-type: none"> - The tissue flotation bath TFB 35 provides a rectangular water bath with removable glass tray. - The electronic temperature control guarantees an exact temperature regulation and indication by digital display. - The large heated stainless steel working area facilitates the handling of section drying. - The water surface is dazzle-free illuminated from below by a fluorescent lamp. - To meet customer's needs, the tissue flotation bath is available in two versions with glass trays of different sizes. |
| 13 | Thermo Scientific™ HistoStar |  | <ul style="list-style-type: none"> - Embed routine tissue samples into paraffin blocks for microtome sectioning comfortably and efficiently with the Thermo Scientific™ HistoStar™ Embedding Workstation. - This workstation reduces fatigue and potential errors common when using other uncomfortable, hot or poorly illuminated embedding centers. |
| 14 | OLYMPUS CX31 |  | <ul style="list-style-type: none"> - Optical system- UIS (Universal Infinity System) optical system Illuminator built in. -6V 30W halogen bulb (PHILIPS 5761) |
| 15 | OLYMPUS BX51 |  | <ul style="list-style-type: none"> - Built-in 12 V 100 W light source - Light preset switch - LED voltage indicator - Focus- Stroke 25 mm - Fine stroke per rotation 100 µm |



College of Applied Medical Sciences
Clinical Laboratory Sciences





| | | | |
|----|--|---|---|
| 16 | Olympus DP25 |  | -The Olympus DP25 is a 5 megapixel digital colour camera for microscopes that is ideal for fast and easy documentation, publication, and image analysis requirements when high resolution detail is essential. |
| 17 | Optech Biostar Microscope |  | <ul style="list-style-type: none"> - It starts with a basic equipment with eyepiece WF 10x with indication - Par focal achromatic objectives 4x / 0,10,10x NA / NA 0.25, 40x / NA 0.65, 100x / NA 1.25 with oil immersion retractable. |
| 18 | Thermo Scientific™ Cimarec™ Digital Stirring Hotplates |  | <ul style="list-style-type: none"> - Carry out general heating applications with Cimarec Digital Stirring Hotplates, which deliver precise stirring control, - Exceptional safety/ temperature performance |
| 19 | Fisher Thermix Stirring Hot Plate Model 310T |  | <ul style="list-style-type: none"> - Fisher Thermix Stirring Hot Plate Model 310T - Volts 115 - HZ60 |
| 20 | Mettler Toledo® - JB1603-C/A-F - Carat Scale |  | <ul style="list-style-type: none"> - Automated Balance device - Fully automatic internal adjustment (FACT) - Vibration adapter with Metal housing - Various weighing units can be displayed - Weighing chemicals and other compounds; to prepare desired concentration solutions |
| 21 | STRETCHING HOT PLATE |  | <ul style="list-style-type: none"> - Dimensions (W/D/H): 150 x 400 x 80 mm - Temperature: 30 - 99 °C - Weight: 3,5 kg - Power Supply: 115/230 V / 50/60 Hz / 300 VA |
| 22 | SHANDON HISTO CENTER |  | <ul style="list-style-type: none"> - Cold plate: factory set at about 10°C, can store some 60 blocs when using standard histology molds/cassettes - Hotplate: adjustable from ambient temperature up to some 80°C - 90°C - Paraffin tank: > 5l, temperature adjustable between 45°C - 75°C |



College of Applied Medical Sciences
Clinical Laboratory Sciences







| | | | |
|----|--------------------------|--|---|
| | | | <ul style="list-style-type: none"> - Paraffin dispenser: wax flow rate adjustable with the black dispenser jet - Forceps warmer: for 4 forceps, temperature dependent on hotplate |
| 23 | SUPREME AIR FUME HOODS |  | <p>The design is based on rigid frame construction that assures a solid installation and low vibration and sound levels.</p> <ul style="list-style-type: none"> - Access panels are easily removable to access service lines and fittings. - Radius corner posts and airfoils, plus, easy operator control of interior baffle settings assure a high level of comfort, safety and efficiency. |
| 24 | GFL 2004 Water Distiller |  | <ul style="list-style-type: none"> - Pure water - Used in research and development e. g. for preparing bacteriological and medical samples, for cell and tissue cultures as well as for the production of reagents and unguents. - Used for cleaning and sterilization processes, for buffered solutions |



College of Applied Medical Sciences
Clinical Laboratory Sciences




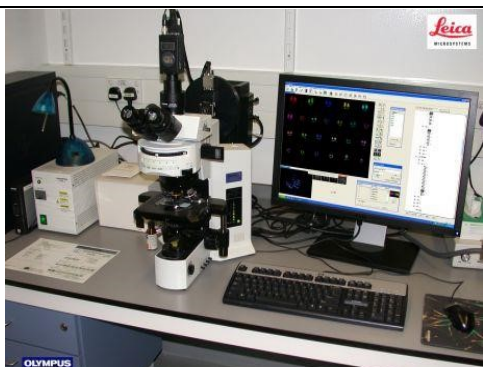

4\ Cytogenetic lab

| No. | Device | Picture | Description and applications |
|-----|-------------------------------------|---|---|
| 1 | Sanyo co2 incubator |  | <ul style="list-style-type: none"> - The Incubator is designed to provide optimum conditions for cell growth. - The CO₂ concentration is tightly controlled using a Humidity Protected CO₂ Sensor. Rapid recovery of CO₂ is ensured upon door opening and closing. - Used to grow cells of : <ul style="list-style-type: none"> ▪ primary cell culture ▪ established cell culture, ▪ monoclonal antibody production stem cell culture |
| 2 | Sanyo Model MIR162 Incubator |  | <ul style="list-style-type: none"> - The incubator is suitable for a wide range of applications that require a temperature range of ambient (+5°C up to +80°C) - The MIR-Series incorporates an 8-bit microprocessor controller for heat and refrigeration control $\pm 0.2^{\circ}\text{C}$. - In the cytogenetic lab it is used for cell harvesting steps and stain fixation and fish technique incubation. |
| 3 | Compact Centrifuge |  | <ul style="list-style-type: none"> - Max. Speed: 6000 rpm Max. - RCF: 4427 xg - Max. Volume: 6 x 50 ml - Speed range: 200 - 6000 rpm with 50 acceleration and 10 deceleration rates |
| 4 | Mettler Toledo™ Analytical Balances |  | <ul style="list-style-type: none"> - Weighing chemicals and other compounds; to prepare desired concentration solutions |



College of Applied Medical Sciences
Clinical Laboratory Sciences






| | | | |
|---|--|---|--|
| 5 | Perkin Elmer Geneamp PCR System 2400 Thermal Cycler |  | <ul style="list-style-type: none"> - Thermocyclers, or thermal cyclers, are instruments used to amplify DNA and RNA samples by the polymerase chain reaction. - The thermocycler raises and lowers the temperature of the samples in a holding block in discrete, pre-programmed steps, allowing for denaturation and reannealing of samples with various reagents. - Amplified genetic material can be used in many downstream applications such as cloning, sequencing, expression analysis, and genotyping |
| 6 | Cytovision microscope |  | <ul style="list-style-type: none"> - CytoVision is scalable from standalone capture stations for karyotyping and FISH, to fully automated unattended metaphase and cellular FISH capture of up to 120 slides - Flexible software modules provide the platform for every cytogenetics and FISH laboratory . |
| 7 | Thermotron Cytogenetic Drying Chamber CDS-5 |  | <ul style="list-style-type: none"> - The CDS-5 was specifically designed for conducting Cytogenetic slide drying tests during harvest of in situ and non-in situ grown cultures. - The CDS-5 provides the optimum controlled temperature and humidity environment, required to achieve ideal chromosome spreading results |



College of Applied Medical Sciences
Clinical Laboratory Sciences



| | | | |
|----|---|---|---|
| 8 | Inverted Microscope |  | <ul style="list-style-type: none"> -Working with live cells involves providing some sort of medium to facilitate the growth of these cells. Whether this involves petri dishes or some other vessels, this (tissue culture cell microscope) that will accommodate them - It also requires microscope objective lenses with longer working distances to be able to focus on the live cells through the bottom of these vessels. |
| 9 | Automated Cell Counter, invitrogen |  | <ul style="list-style-type: none"> - Is a benchtop counter designed to measure cell count and viability (live, dead, and total cells) accurately and precisely, using the standard trypan blue technique. - The Countess™ automated cell counter takes less than a minute per sample for a typical cell count and is compatible with a wide variety of eukaryotic cells and provides information on cell size. - It offers an intuitive user interface, and provides the option to save and print cell count data using the Countess™ software (download from www.invitrogen.com/countess) and USB drive supplied with the instrument or available separately |
| 10 | Labconco Purifier Laminar Air Flow Hood |  | <ul style="list-style-type: none"> - Is a carefully enclosed bench designed to prevent contamination of semiconductor wafers, biological samples, or any particle sensitive materials. - Air is drawn through a HEPA filter and blown in a very smooth, laminar flow towards the user. - Due to the direction of air flow, the sample is protected from the user but the user is not protected from the sample |



College of Applied Medical Sciences
Clinical Laboratory Sciences







| | | | |
|--|--|--|---|
| | | | <ul style="list-style-type: none">- The cabinet is usually made of stainless steel with no gaps or joints where spores might collect.- have a UV-C germicidal lamp to sterilize the interior and contents before usage to prevent contamination of the experiment.- Germicidal lamps are usually kept on for fifteen minutes to sterilize the interior before the cabinet is used-usually used in cell culture techniques. |
|--|--|--|---|



College of Applied Medical Sciences
Clinical Laboratory Sciences




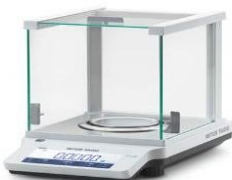



5\ Molecular lab

| No. | Device | Picture | Description and applications |
|-----|--------------------------|---|---|
| 1 | Centrifuge 5418 R |  | <ul style="list-style-type: none"> - 18-place capacity centrifuges for molecular biology that are specifically designed for low to medium capacity in 1.5/2.0 mL tubes and Microtainer. - Their speed of up to $16,873 \times g$ allows for standard molecular biology applications. |
| 2 | GeneAmp® PCR System 9700 |  | <ul style="list-style-type: none"> - GeneAmp® PCR System 9700 is specifically designed for the amplification of nucleic acids - This GeneAmp® PCR System 9700 consists of a base module and the 96-Well Gold-Plated Silver Sample Block module. - The 96-well GeneAmp® PCR System 9700 is designed for use with 0.2 ml reaction tubes or 96well reaction plates for all of your routine PCR applications |
| 3 | Microwave oven |  | <ul style="list-style-type: none"> - Microwave oven is used to melt agarose gel to prepare for electrophoresis run. |
| 4 | Light microscope |  | <ul style="list-style-type: none"> - Using Stained Prepared slides you should see bacteria, chromosomes, organelles, protest or metazoans, smears, blood, negative stained bacteria and thick tissue sections. - Utilizing unstained wet mounts for living preparations should enable you to see pond water, living protests or metazoans, and plant cells such as algae. |



College of Applied Medical Sciences
Clinical Laboratory Sciences






| | | | |
|---|--|---|---|
| 5 | Fluorescent microscope CX-41, Olympus |  | - Fluorescent microscope is used to visualize bacteria , yeast ,eukaryotic cells by fluorescence technique. In the life sciences fluorescence microscopy is a powerful tool which allows the specific and sensitive staining of a specimen in order to detect the distribution of proteins or other molecules of interest |
| 6 | Mettler Toledo™ Analytical Balances |  | -Weighing chemicals and other compounds; to prepare desired concentration solutions. |
| 7 | Rotor gene-PCR (Quagen) |  | - Amplification of DNA; useful in Molecular Biology and Forensic laboratories |
| 8 | Gel Documentation Or Gel Imager, BIORAD |  | - Gel imaging systems is used for detecting and imaging fluorescence, chemiluminescence, stain-free and colorimetric blots and gels. |
| 9 | CFX connect, Polymerase Chain Reaction (PCR) BIORAD |  | - Polymerase chain reaction or PCR , is a technique to make many copies of a specific DNA <i>region</i> in vitro. - used for DNA amplification |



College of Applied Medical Sciences
Clinical Laboratory Sciences






| | | | |
|----|---|---|---|
| 10 | Gel Electrophoresis (Horizontal) BIORAD |  | -Gel electrophoresis is a method for separation and analysis of macromolecules (DNA, RNA and proteins) and their fragments, based on their size and charge. |
| 11 | Qubit Fluorometer - invitrogen |  | -The Qubit fluorometer uses fluorescent dyes to determine the concentration of either nucleic acids or proteins in a sample -Qubit system is supplied with fluorescent dyes that bind specifically to analytes of interest such as double-stranded DNA (dsDNA), single-stranded DNA (ssDNA), RNA, miRNA or protein providing more accurate quantification. |
| 12 | Centrifuge (Hettich) Universal 320R |  | - Separation of serum, proteins, DNA and cell debris. Used in the purification steps in molecular biology, cell biology and other life sciences. |



College of Applied Medical Sciences
Clinical Laboratory Sciences



6\ Pathology Lab







| No. | Device | Picture | Description and applications |
|-----|------------------|---|--|
| 1 | ThinPrep 2000 |  | - The Thin Prep 2000 can be used for non- gynecological specimens such as for the diagnosis of cancers of the lung, bladder, and gastrointestinal tract, and in the preparation of fine needle aspiration of the thyroid and breast. |
| 2 | Light microscope |  | - The CX21 is an economically priced Olympus microscope that achieves a high standard of optical and mechanical quality for educational applications. |
| 3 | Olympus DP25 |  | - The Olympus DP25 is a 5 megapixel digital colour camera for microscopes that is ideal for fast and easy documentation, publication, and image analysis requirements when high resolution detail is essential. |



College of Applied Medical Sciences
Clinical Laboratory Sciences









7\ Microbiology Lab

| No. | Device | Picture | Description and applications |
|-----|--|---|---|
| 1 | Light Microscope, Olympus. |  | - Magnification of objects on slides 4X, 10X, 40X, and 100X. -Applications: 1\ Biological samples. 2\Cell Morphology. 3\Cell photography. |
| 2 | Phase contrast microscope, Olympus |  | - Designed for: 1\Teaching, demonstration 2\Clinical examination 3\Research purpose |
| 3 | Drying oven, Sanyo. |  | - Enabling simple glassware drying to the most complex controlled heating applications. -Heating and drying oven portfolio allows for stability and reproducibility for the desired application needs. |
| 4 | Vortex mixer |  | - Used for liquids mixing in different test tubes, flasks, beakers. |
| 5 | IN450 incubator, Memmert |  | - Ideal for all applications that require reliable and safe temperatures up to +70°C, specifically for incubating living cultures at +37 °C. |
| 6 | Digital Ceramic Hot Plate Stirrer, with Timer - AREC.T |  | - To stir volumes up to 15 liters (H2O) at very high speeds. |



College of Applied Medical Sciences
Clinical Laboratory Sciences



| | | | |
|----|-----------------------------------|---|--|
| 7 | Dissecting Microscope. |  | <ul style="list-style-type: none"> - They are the only microscopes that can produce three dimensional images and have a small magnification. - This prevents the user from seeing highly detailed images, but allows larger portions of the object to be viewed. - Used to see the organs of an insect, for the inspection of flat shiny surfaces and in biological applications to make any surgical biopsies. |
| 8 | Inverted Microscope |  | <ul style="list-style-type: none"> -This type of microscope is suitable for viewing culture vessels such as Petri dishes. |
| 9 | Weighing balance, Mettler Toledo. |  | <ul style="list-style-type: none"> -Ideal for advanced weighing applications, such as parts counting, check weighing, totalizing or filling |
| 10 | Water path, GFL |  | <ul style="list-style-type: none"> -To heat the samples with steam water - Set from 25 up to 100 C |
| 11 | Colony Counter, Gallenkamp |  | <ul style="list-style-type: none"> -For Rapid, manual counting of colonies in microbiology lab |
| 12 | Slide Warmer XH-2001, Premiere |  | <ul style="list-style-type: none"> - Ideal for use in the fields of cytology, histology, pathology, and biology for paraffin tissue section mounting. - Thermal heater ensures even heat transfer |



College of Applied Medical Sciences
Clinical Laboratory Sciences




| | | | |
|----|---|---|---|
| 13 | Bacti- Cinerator™ IV Sterilizer,McCor mick |  | - Safely sterilizes loops and needles by infrared heat |
|----|---|---|---|



College of Applied Medical Sciences
Clinical Laboratory Sciences



7\ Electron Microscopy Lab




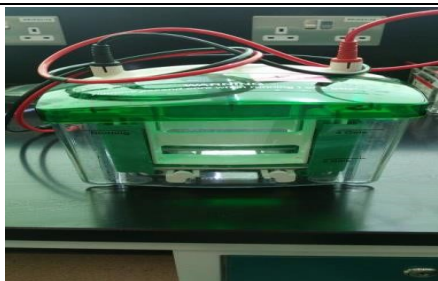
| No. | Device | Picture | Description and applications |
|-----|---|---|---|
| 1 | JEM-2100F Transmission Electron Microscope |  | <ul style="list-style-type: none"> - The JEM-2100F has been developed to achieve the highest image quality and the highest analytical performance in the 200kV class analytical TEM with a probe size under 0.5nm. - The new side-entry goniometer stage provides ease of use tilt, rotation, heating and cooling |
| 2 | Reichert-Jung Ultra cut E Ultra microtome |  | <ul style="list-style-type: none"> -The Reichert-Jung ultra-cut ultra microtome has the following specifications: 1\ Micro Specimen Thickness Range 0 to 0.5 microns 2\ Ultra Specimen Thickness Range 0 to 0.14 microns 3\ Motorized Cutting Stroke with Adjustable Speed 0.1 to 90 mm/sec. 4\ Sectioning Window Adjustable 0.5 to 22mm Manual Sectioning 5\ Possible with Built In Hand wheel |
| 3 | Microtome knife sharpener type MMS |  | <ul style="list-style-type: none"> - Variable honing programs by means of: 2 honing compounds -2 honing surfaces (coarse + fine) - Variable speed, selectable - Time clock up to 120 minutes - Height adjustment for better sharpening result |



College of Applied Medical Sciences
Clinical Laboratory Sciences






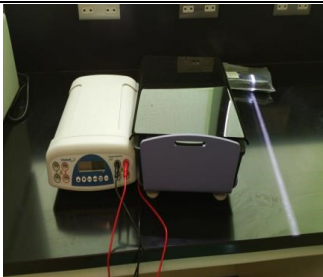

8\ Research Lab

| No. | Device | Picture | Description and applications |
|-----|---|---|---|
| 1 | Polymerase Chain Reaction(PCR), Gene Amp9700, Applied Bio system |  | - Polymerase chain reaction or PCR , is a technique used to make many copies of a specific DNA region <i>in vitro</i> . |
| 2 | Thermocycler, Polymerase Chain Reaction (PCR), Analytik gena |  | - Polymerase chain reaction or PCR , is a technique used to make many copies of a specific DNA region <i>in vitro</i> . |
| 3 | Gel Electrophoresis (Horizontal) BIORAD |  | - Gel electrophoresis is a method for separation and analysis of macromolecules (DNA, RNA and proteins) and their fragments, based on their size and charge. |
| 4 | Gel Electrophoresis (Vertical) BIORAD |  | - Gel electrophoresis is a method for separation and analysis of macromolecules (DNA, RNA and proteins) and their fragments, based on their size and charge. |



College of Applied Medical Sciences
Clinical Laboratory Sciences




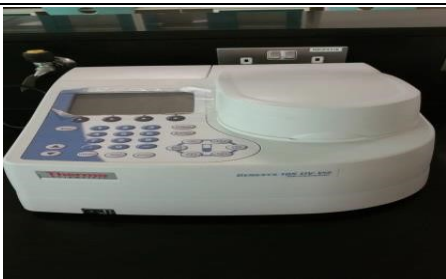



| | | | |
|---|--|---|---|
| 5 | Gel Documentation Or Gel Imager, ipro silver |  | - Gel imaging systems is used for detecting and imaging fluorescence, chemiluminescence, stain-free and colorimetric blots and gels |
| 6 | Protein Electrophoresis, Sebia |  | - Protein electrophoresis technique, routinely used in clinical laboratories. - Used for screening of protein abnormalities in serum and other biological fluids. |
| 7 | Automated Electrophoresis, (Expression- BIORAD) |  | - Electrophoresis is used for separation and analysis of macromolecules (DNA, RNA and proteins). |
| 8 | Commet Assay |  | - Separation of DNA and Detection of DNA damage. |
| 9 | Water Purification (Deionizer), Thermoscientific |  | Water deionization requires the passage of water through ion exchange resins to produce ion free water. - It is useful to get deionized water for use in molecular genetics/biochemical analysis. |



College of Applied Medical Sciences
Clinical Laboratory Sciences








| | | | |
|----|--|---|--|
| 10 | Luminex- Milliplex Millipore |  | <ul style="list-style-type: none"> - Immunoassays based on Luminex MAP (multi-analyte profiling) technology enable simultaneous detection and quantitation of multiple secreted proteins (cytokines, chemokines, growth factors, etc.). - For the comprehensive study of biological systems. |
| 11 | ELISA SFRI |  | <ul style="list-style-type: none"> - ELISA (enzyme-linked immunosorbent assay) is a plate-based assay technique designed for detecting and quantifying substances such as peptides, proteins, antibodies and hormones. |
| 12 | Titre Plate Shaker Thermoscientific |  | <ul style="list-style-type: none"> - It is used for mixing the contents of the wells in Microtitre plate. - Used in combination with ELISA and for Multiplex readers. |
| 13 | UV-Visible Spectrophotometer, Thermoscientific |  | <ul style="list-style-type: none"> - Qualitative and quantitative estimation of biomolecules like DNA, proteins, sugars etc. |
| 14 | UV-Visible Spectrophotometer Jenway 6405 |  | <ul style="list-style-type: none"> - Qualitative and quantitative estimation of biomolecules like DNA, proteins, sugars etc. |



College of Applied Medical Sciences
Clinical Laboratory Sciences




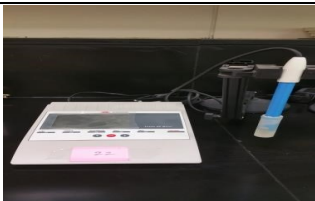



| | | | |
|----|--|---|---|
| 15 | UV-Visible Spectrophotometer, PD-303 APEL |  | - Qualitative and quantitative estimation of biomolecules like DNA, proteins, sugars etc |
| 16 | UV-Visible Spectrophotometer, Jenway 6300 |  | - Qualitative and quantitative estimation of biomolecules like DNA, proteins, sugars etc. |
| 17 | HPLC- High Performance Liquid Chromatography, Thermoscientific |  | - HPLC is a chromatographic technique used to split a mixture of compounds. It has vast applications in the fields of analytical chemistry, biochemistry and industries. The main purpose for using HPLC is for identifying, quantifying and purifying the individual components of the mixture based on varying principle of separation. |
| 18 | Isoelectric Focusing- (IEF), BIORAD |  | - Separation of proteins based on their Isoelectric point. |
| 19 | Electronic Balance |  | - Weighing chemicals and other compounds; to prepare desired concentration solutions |



College of Applied Medical Sciences
Clinical Laboratory Sciences






| | | | |
|----|---|---|---|
| 20 | Distillation Unit, GFL |  | - Production of distilled water for use in chemicals or media preparation. |
| 21 | Electronic Balance, Thomas |  | - Weighing chemicals and other compounds; to prepare desired concentration solutions. |
| 22 | pH meter Thermoscientific |  | - pH meter are used to measure the pH of the solution. |
| 23 | pH meter, TS625 |  | - pH meter are used to measure the pH of the solution. |
| 24 | Co2 incubator, Sanyo connected with Co2 Slender |  | - CO ₂ incubators are necessary equipment for research and clinical laboratories conducting cell culture and tissue culture work. CO ₂ incubators can be used for routine applications such as cell cultivation or for specific protocols such as IVF and stem cell applications (oocyte collection and prep, preimplantation diagnostics, embryo transfers and sperm preparation |



College of Applied Medical Sciences
Clinical Laboratory Sciences



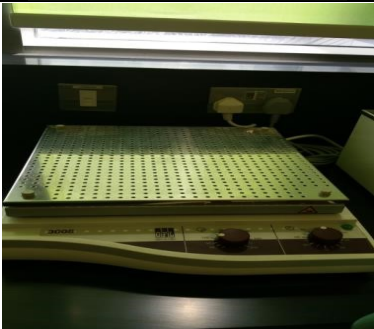




| | | | |
|----|---------------------|---|---|
| 25 | Incubator, Sanyo |  | - Incubator is a device used to grow and maintain microbiological cultures or cell cultures. |
| 26 | Hot Air Oven, Sanyo |  | - Hot air ovens are electrical devices which use dry heat to sterilize. Useful in sterilization of glassware |
| 27 | Agile Reader |  | - AgileReader™ is highly versatile and can perform many different applications such as ELISAs / EIAs, enzymatic activity, bacterial growth studies, and fast kinetic assays |



College of Applied Medical Sciences
Clinical Laboratory Sciences

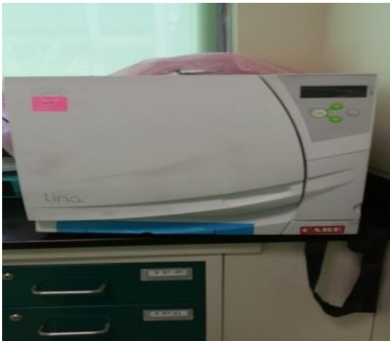






| | | | |
|----|--|---|--|
| 28 | Hot plates, IKA-C-MAG MS7&Fisher |   | - Used in melting and preparation of gels |
| 29 | Shaker, GFL |  | - A <i>shaker</i> contains an oscillating board which is used to place the flasks, beakers, test tubes, etc. It is used to mix, blend, or to agitate substances in tube(s) or flask(s) by shaking them, and is vastly used in the fields of microbiology |
| 30 | Shaking Incubator |  | Incubator Shaker is a combination of incubator and a shaker. It has an ability to shake, while maintain optimal conditions for incubating microbes or cell cultures. |
| 31 | Ice maker, BREMA |  | - Ice maker is used to make ice that can be used to provide low temperature during working or transfer of cultures or enzymes maintained at low temperature |



College of Applied Medical Sciences
Clinical Laboratory Sciences


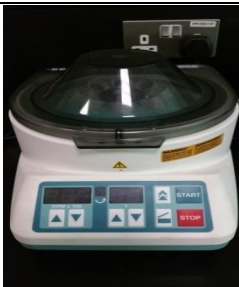





| | | | |
|----|---|---|---|
| 32 | Bench top Autoclave (LINA) |  | - Lina Autoclave is a small sterilizer, which is uniquely designed to aid medical practitioners. The equipment offers exclusive type B cycles that are perfectly suitable for sterilizing all ranges of surgical and dental products. |
| 33 | BACTEC –Blood cell culture |  | - BACTEC blood culture system is a fully automated microbiology growth and detection system designed to detect microbial growth from blood specimens |
| 34 | POURMATIC-plate pouring machine, MP-100 |  | - PourMatic , which has up to 320 plates can be poured and stacked in about 20 minutes without operator intervention. This unit is an automated dish-filling system that produces high quality agar plates at low cost. |
| 35 | Loop Incinerator |  | - Sterilization of Bacterial loops for inoculation, transfer and culture of microorganisms on media. |
| 36 | Microwave, Daewoo |  | - Microwave is useful in Molecular biology lab for melting and preparation of gels. |



College of Applied Medical Sciences
Clinical Laboratory Sciences








| | | | |
|----|---|---|--|
| 37 | Centrifuge (Hettich) Universal 320R |  | - Separation of serum, proteins, DNA and cell debris. Used in the purification steps in molecular biology, cell biology and other life sciences. |
| 38 | Clinical Centrifuge |  | -Separation of serum, proteins, cultures, any precipitates or biomolecules. |
| 39 | Vertex shaker-VELP |  | - Vortex Shaker is usually a small device used to shake, or mix small vials of liquid substance |
| 40 | Orbital shaker, Cole palmer |  | - Orbital Shaker has a circular shaking motion with a slow speed (25- 500 rpm). It is suitable for culturing microbes, washing blots, and general mixing of biological samples. |
| 41 | Magnetic stirrer, minimagmix |  | - Magnetic stirrers are very common in experimental chemistry and biology. They are used to mix components (solids and liquids) to get homogeneous liquid mixtures. Common examples include bacterial growth media and buffer solutions. |



College of Applied Medical Sciences
Clinical Laboratory Sciences


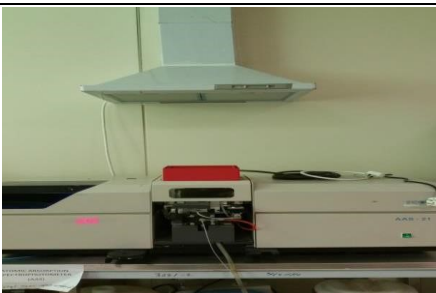



| | | | |
|----|---|---|---|
| 42 | Dry Bath |  | - Dry bath is a type of laboratory equipment that is used to heat samples. Dry baths are often used in molecular biology, microbiology, biochemistry and genetic applications |
| 43 | Water bath (Mettler) |  | - Water bath is used for providing required temperature for incubation of biological samples. It also provide boiling water when maintained at 100° C |
| 44 | Freeze dryer (Lyophiliser) Alpha 1-2 christ |  | - Freeze Dryer is a lyophilisation technique for preserving samples or increasing the shelf life. It also is used in preparation of dry cells /tissues in microscopy or flame photometry. |
| 45 | Deep freezer (Fiochetti) |  | - Ultra low freezer is used to store biological samples up to -30 C |
| 46 | Deep freezer (Cryopride) |  | - Ultra low freezer is used to store biological samples up to -80 C |



College of Applied Medical Sciences
Clinical Laboratory Sciences



| | | | |
|----|--|---|--|
| 47 | Biological safety cabinet |  | - Provide a sterile environment needed for the culturing of mammalian/bacterial cells |
| 48 | Atomic Absorptions Spectrophotometer (AAS), SCo tech |  | - Analysis of trace elements like calcium, copper, zinc etc. |
| 49 | Light Microscope, Olympus. |  | - Magnification of objects on slides 4X, 10X, 40X, and 100X. -Applications: 1\Biological samples. 2\ Cell Morphology. 3\ Cell photography. |