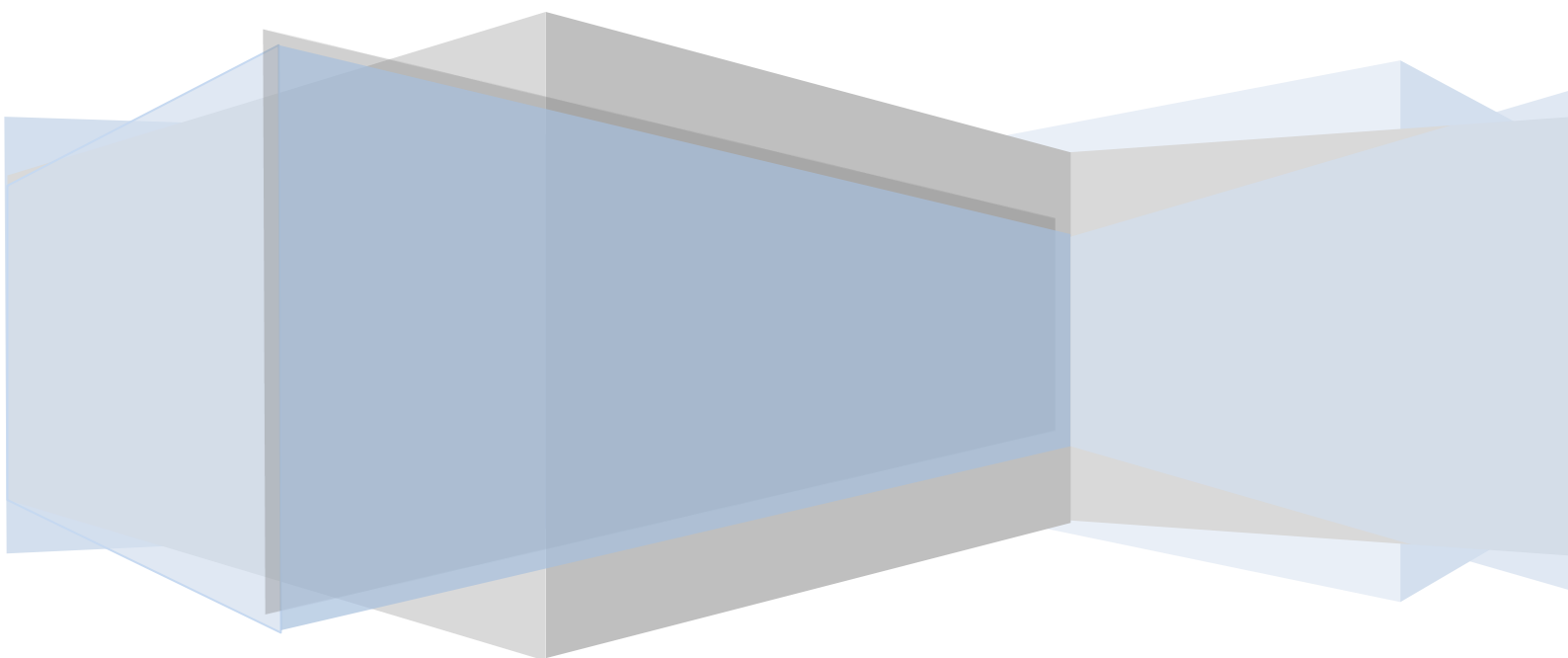




UNIVERSITY OF SARAJEVO
FACULTY OF PHARMACY

EQUIPMENT CATALOGUE FACULTY OF PHARMACY UNIVERSITY OF SARAJEVO



SARAJEVO, 2025

Dean's word

The Faculty of Pharmacy of University of Sarajevo applies modern educational and research methods with the aim of educating masters of pharmacy who are fully trained for professional and responsible work in all areas of pharmaceutical science. Carrying out the teaching and scientific process and monitoring modern trends is impossible without adequate equipment.

Therefore, the scientific and professional base of the Faculty has been strengthened and the procurement and modernization of the equipment available to the Faculty has been carried out. Our students are enabled to acquire knowledge and acquire the skills necessary for future work, and our employees are encouraged to continue their successful research work.

The catalog of equipment of the Faculty of Pharmacy, University of Sarajevo contains a list of the most important equipment and represents a mirror of the work and potential of our Faculty. At the same time, the catalog represents an opportunity for new collaborations as well as better mutual cooperation of our employees with the aim of achieving enviable scientific results.

I sincerely hope that the above equipment will contribute to the mentioned goals.

Sarajevo, 28.05.2020.

Dean

Full Professor, Fahir Bečić, PhD, MPharm

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Device	Ugo Basile [™] Plethysmometer
Model	Ugo Basile Srl. Italy /Model No. 7141; Lot No. 18658.
Picture	
Application	In vivo study of anti-inflammatory and antiedematous activity in a rat and mouse model.
Technical characteristics	Ugo Basile [™] Plethysmometer is a microprocessor volume meter that is a standard instrument for measuring rat / mouse paw volume. The measuring cell consists of 2 vertically connected Perspex tubes into which a rat / mouse paw is applied (Larger tube: 1.8 cm; Smaller tube: 1.3 cm). Volt. 100-240; Hz. 50/60; Warr. 20
Contact	Full Professor Fahir Bečić, PhD, MPharm Department of Pharmacology and Clinical Pharmacy fahir.becic@ffsa.unsa.ba


Device	Ugo Basile™ Hot / Cold plate
Model	Ugo Basile Srl/Model Cat. No. 35150
Picture	
Application	Examination of analgesia of in vivo model of acute, subacute and chronic pain in rats and mice.
Technical characteristics	<p>Ugo Basile™ hot / cold plate is a standard test of thermal pain in rats / mice.</p> <p>Temperature range: - 5.0 ° C to 65.0 ° C</p>
Contact	<p>Full Professor Fahir Bečić, PhD, MPharm Department of Pharmacology and Clinical Pharmacy fahir.becic@ffsa.unsa.ba</p>


Device	Biochemical analyzer XL-200 ERBA Mannheim
Model	2522162/2021
Picture	
Application	Fully Automated Random Access Clinical Chemistry Analyzer with a throughput of 200 tests/hr (photometric test) and 400 tests/hr with ISE (Na/K/Cl/Li). 30 Position Reagent Tray with On-board cooling, convenient software and extensive quality control menu.
Technical characteristics	<p>Sample volume: 2-70 μl (in 0,2 μl step)</p> <p>Reagent volume: R1 50-300 μl (in 1 μl step), R2 10-200 μl (in 1 μl step)</p> <p>Dispensing probe equipped with liquid -level sensor and crash detector</p> <p>Auto-dilution of samples and calibrators</p> <p>Minimum reaction volume: 180 μl</p> <p>4 levels of control material can be used</p> <p>45 reusable hard glass cuvettes</p> <p>Reaction temperature 37°C \pm 0,2°C</p> <p>39 positions for samples, blanks, standards, calibrators, controls and ISE solutions</p> <p>Air cooler (8-12°C)</p>
Contact	<p>Associate Professor Tamer Bego, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory Diagnostics</p> <p>tamer.bego@ffsa.unsa.ba</p>


Device	Sysmex XN-550 Compact 5-part differential hematology analyser
Model	21496/2020
Picture	
Application	<p>The XN-550 features an automated sampler and so improves workflow productivity with its Rerun & Reflex functionality and continuous loading feature. This model also has an integrated IPU and is operated via a compact LCD colour touchscreen. XN-550 incorporates the proven Sysmex technologies of fluorescence flow cytometry, hydrodynamic focussing and our cyanide-free SLS method for determining haemoglobin. Ready for the future, it can be upgraded by adding new clinical and productivity values, or by opting for further professional services and connecting to our Extended IPU as your demands change.</p>
Technical characteristics	<p>Dimensions / weights: W x H x D [mm / kg] 450 x 450 x 660 / 53 kg Throughput up to 60 samples/h Aspiration volume: 25 µL Analysis parameters: WBC, RBC, HGB, HCT, MCV, MCH, MCHC, PLT, RDW-SD, RDW-CV, PDW, MPV, P-LCR, PCT, NEUT#, LYMPH#, MONO#, EO#, BASO#, NEUT%, LYMPH%, MONO%, EO%, BASO%, IG#, IG% Measurement principles: Fluorescence Flow Cytometry, DC Impedance method with hydrodynamic focussing, Cyanide-free SLS method</p>
Contact	<p>Associate Professor Tamer Bego, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tamer.bego@ffsa.unsa.ba</p>


Device	Snibe Maglumi 600 Fully Automatic Immunoassay Analyzer
Model	23020018/2019
Picture	
Application	MAGLUMI 600 is a compact and powerful analyzer that can perform up to 180 tests per hour in a minimal space. Utilizing the advanced X-TECH technology, Maglumi can deliver precise and reliable results for small to medium-sized hospitals and laboratories.
Technical characteristics	<p>Dimensions. 88x56x50cm.</p> <p>Application. Hospital, Clinical Laboratory.</p> <p>Specification Principle of Luminescence • Non-enzyme involved flash chemiluminescence, long stability of reagents • ABEI label, stable in acid and alkaline solution</p> <p>Throughput. up to 180 tests/hour.</p> <p>Time to first result. 17 minutes.</p> <p>Weight. 56Kg.</p> <p>Operating Temperature. 15-30 Deg C.</p> <p>Sample Loading • Up to 16 sample tubes • Continuous loading, STAT available • Analyzer auto numbered • LIS connection • Refrigerated sample area with independent power supply</p>
Contact	<p>Associate Professor Tamer Bego, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory Diagnostics</p> <p>tamer.bego@ffsa.unsa.ba</p>


Device	Inverted microscope
Model	VWR® VisiScope® IT415
Picture	
Application	It is used in monitoring the growth and viability of cell cultures during the cultivation and treatment process in clinical and biotechnological research.
Technical characteristics	<p>Light source: type P-LED8 with white LED 8W</p> <p>Light intensity control using the button on the left side of the frame</p> <p>Color temperature: 6300K LED, average life approx. 50,000h</p> <p>Voltage: 110/240Vac, 50/60Hz, 1A</p> <p>Fuse: T500mA 250V</p> <p>Maximum required power: 13W</p> <p>Total dimensions = 250x230 mm</p> <p>Weight = 9 kg</p>
Contact	<p>Associate Professor Tamer Bego, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory</p> <p>Diagnostics</p> <p>tamer.bego@ffsa.unsa.ba</p>


Device	Biosafety Cabinet
Model	Biobase BSC-1500IIA2-X
Picture	
Application	It serves to purify the air under negative pressure which is essential for maintenance of aseptic conditions. It can also prevent the release of aerosols of dangerous or unknown biological particles in the process of experimental work.
Technical characteristics	<p>Workspace made of cold-rolled steel with antibacterial powder coating</p> <p>2 H14 HEPA filters 2 with 99.9995% efficiency</p> <p>UV lamp with timer</p> <p>Two waterproof sockets</p> <p>LCD screen</p> <p>Foot switch</p> <p>External size: 1100x750x2250. Maximum opening mm: 420</p> <p>UV lamp: 1*30 W at 253.7 nm</p> <p>Consumption: 760W</p>
Contact	<p>Associate Professor Tamer Bego, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory Diagnostics</p> <p>tamer.bego@ffsa.unsa.ba</p>


Device	Centrifuge with cooling
Model	Sigma 2-16KL
Picture	
Application	For wide application in the centrifugation of PCR tubes, standard tubes, tubes with a round bottom, tubes for cell cultures and microtiter plates.
Technical characteristics	Temperature range -12 °C to 40 °C Max. volume ml 400 Max. number of tubes 4 x 100; 34x41x71. Power 960 W Weight 39 kg
Contact	Associate Professor Tamer Bego, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tamer.bego@ffsa.unsa.ba


Device	Incubator for cell cultures
Model	Memmert ICO150
Picture	
Application	Achieving and maintaining optimal conditions (temperature, CO ₂) for the growth and development of cell cultures, and ensuring conditions to prevent contamination of cell cultures.
Technical characteristics	<p>Operating temperature range: 5 °C above ambient temperature up to +50 °C</p> <p>Standard sterilization program: 60 minutes at 180 °C</p> <p>Temperature adjustment range: +18 to +50 °C</p> <p>Digital electronic CO₂ control with dual beam NDIR</p> <p>Auto-diagnostic system and fault indication</p> <p>Automatic adjustment of barometric pressure</p> <p>CO₂ adjustment range: 0-20%</p> <p>Dimensions 560 x 700 x 400 mm</p> <p>Inner material: 1.4301 (ASTM 304), corrosion resistant</p> <p>Volume: 156 L</p> <p>Maximum load: 120 kg</p>
Contact	<p>Associate Professor Tamer Bego, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory Diagnostics</p> <p>tamer.bego@ffsa.unsa.ba</p>

Device	Biosan CVP-2 Centrifuge/Vortex for PCR plates
Model	BS-010219-A02
Picture	
Application	The CVP-2 is a fully automated device for simultaneous reproduction of the "spin-mix-spin algorithm" for two PCR plates, which saves a lot of time. The instrument finds its application in the laboratory for PCR and DNA analysis. CVP-2 combines: centrifuge, vortex and centrifuge / vortex
Technical characteristics	Speed range: 300–1500 rpm Vortex range: 300–1200 rpm Screen: LCD Number of cycles: 1-999 Weight: 6.15 kg
Contact	Associate Professor Tanja Dujić, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba


Device	QuantStudio™ 5 Real-Time PCR
Model	A34322/2017
Picture	
Application	<p>The Applied Biosystems QuantStudio 5 Real-Time PCR System for Human Identification is the instrument designed for both new and experienced users who need a simple, reliable and affordable real-time PCR system. This system offers a sensitive, robust solution for forensic DNA quantification.</p> <p>QuantStudio™ 5 The real-time PCR instrument uses polymerase chain reaction (PCR) and fluorescent reagents to:</p> <ul style="list-style-type: none"> • Quantitative determination of target nucleic acid sequences (targets) • Qualitative target detection (endpoint analysis, genotyping and presence / absence)
Technical characteristics	<p>10 GB of built-in memory to store 2,000 to 5,000 analysis</p> <p>96-well format</p> <p>0.2 mL</p> <p>Touchscreen screen</p> <p>Human identification (HID) -valid system</p>
Contact	<p>Associate Professor Tanja Dujić, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory Diagnostics</p> <p>tanja.dujic@ffsa.unsa.ba</p>


Device	Shimadzu BioSpec-nano
Model	
Picture	
Application	<p>The BioSpec-nano is a spectrophotometer suitable for testing the concentration of nucleic acids (DNA and RNA) in samples. The amount of DNA and RNA can be determined quickly and easily in a very small amount of sample (1µL)</p>
Technical characteristics	<p>Wavelength range: 220 - 800 nm Precision for wavelength adjustment: ± 1 nm Road length: 0.2 mm, 0.7 mm (manual selection) Light source: Xenon flash lamp Detector: Photo diode array Quantification range (OD, dsDNA concentration):</p> <ul style="list-style-type: none"> • Road length 0.2 mm (50-3,700 ng / µL) • Road length 0.7 mm (15-1,000 ng / µL) • Path length 5 mm Optional (2-150 ng / µL)
Contact	<p>Associate Professor Tanja Dujić, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba</p>


Device	BioRad T100™ Thermal Cycler
Model	1861096
Picture	
Application	<p>The T100 Thermal Cycler is an instrument used to perform polymerase chain reaction (PCR). Thermal gradient technology allows precise temperature adjustment during each analysis which enhances the polymerase chain reaction. T100 Thermal Cycler is used for:</p> <ul style="list-style-type: none"> • Nucleic acid amplification • Gene cloning and analysis • Gene expression analysis • Mutation analysis • Cyclic sequencing
Technical characteristics	<p>Sample capacity: 96 x 0.2 ml tubes; 96-well plate Temperature range: 4–100 ° C Temperature accuracy: ± 0.5 ° C for the target temperature Screen: 5.7 " VGA color touch screen</p>
Contact	<p>Associate Professor Tanja Dujić, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba</p>


Device	Biotek ELx800 Microplate Reader
Model	
Picture	
Application	The ELx800™ is a compact, ideally suited microplate reader for use in the clinical and research laboratory. It is used for kinetic measurements as well as scanning and measuring samples on microplates from 6 to 384 wells. This instrument is used to determine parameters by immunoenzymatic (ELISA) methods. The working principle is based on spectrophotometric determination based on the measured absorbance at certain wavelengths
Technical characteristics	Wavelength range: 340 - 750 nm Filters: 340, 405, 450, 490, 630 nm Data can be saved on the device, printed or stored on a computer
Contact	Associate Professor Tanja Dujic, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba


Device	Vilber Transilluminator – visualize DNA and PCR fragments
Model	ECX-F20.BLUE V1 - LED SKYLIGHT
Picture	
Application	Transilluminator for the visualisation of nucleic acids (DNA) and PCR fragments. The 470 nm Skylight blue LED transilluminator is ideal for visualising Midori Green™ or SYBR® dyes without exciting them with UV.
Technical characteristics	Dimensions (L x B x H) 330 x 320 x 130 mm Weight 6.3 kg Work area 260 x 210 mm Power 2 A
Contact	Associate Professor Tanja Dujić, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba


Device	Biosan Intelispeed microplate washer IW-8
Model	BS-060106-IVD1
Picture	
Application	<p>The Intelispeed Washer IW-8 is designed to wash standard 96-well plates during analysis. The appliance is fully programmed to ensure rinsing in several steps (aspiration, rinsing, aspiration-drying). The device has the ability to set 100 programs defined by the user. In addition, the appliance can be used for rinsing the plates with different depths of wells.</p> <p>The unit provides various:</p> <ul style="list-style-type: none"> -Washing methods -Rinsing methods -Mixing methods
Technical characteristics	<p>Maximum working volume: 1600 μl Minimum working volume: 25 μl Accuracy: \pm 2.5% Number of wells to be flushed simultaneously: 8 Aspiration time: 0.2–3 s Aspiration / operation speed: 3 levels Number of rows that can be washed: 1 - 12 Number of possible programs: 101 Weight: 9.6 kg</p>
Contact	<p>Associate Professor Tanja Dujic, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba</p>


Device	Biosan PST-100HL, Plate Shaker-Thermostat
Model	BS-010142-AAI
Picture	
Application	<p>The Plate Shaker-Thermostat is designed to provide constant shaking and thermostating of 2 standard 96-well plates. It consists of 3 independent devices:</p> <ul style="list-style-type: none"> Incubator Microwave shaker Thermo-Shaker <p>The PST-100HL thermo-shaker with the ability to stabilize temperatures up to 100 ° C is specially designed for hybridization reactions.</p> <p>Plate Shaker - Thermostat offers:</p> <ul style="list-style-type: none"> Shaking the sample Regulation, stabilization and indication of speed of movement Time settings Automatic stopping of the platform after the set time has elapsed Setting and specifying the required temperature on the platform <p>The device is mostly used in the fields:</p> <ul style="list-style-type: none"> Cytochemistry - for <i>in situ</i> reactions Immunochemistry - for enzyme-linked immunosorbent assays Biochemistry - for enzyme and protein analysis Molecular biology - "Microarray" analysis
Technical characteristics	<p>Temperature range: +25 ° C ... +100 ° C</p> <p>Speed range: 250–1200 rpm</p> <p>Screen: LCD</p> <p>Number of tiles: 2</p> <p>Weight: 5.9 kg</p>
Contact	<p>Associate Professor Tanja Dujic, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory Diagnostics</p> <p>tanja.dujic@ffsa.unsa.ba</p>


Device	Turner Designs TD-700 Fluorometer
Model	
Picture	
Application	<p>The TD-700 Fluorometer is used in the laboratory for the purpose of identifying compounds that have the ability to fluoresce. Fluorometry is one of the most commonly used analytical methods. The re-emission (fluorescence) ability is monitored using an optical filter and a suitable lamp</p>
Technical characteristics	<p>Detector: Factory fitted photometric tube Standard: 300 - 650 nm Sensitivity: 185 - 870 nm Lamp: Quartz Halogen or mercury vapor lamp under low pressure Operating temperature: 15 - 36 ° C Weight: 5.9 kg</p>
Contact	<p>Associate Professor Tanja Dujic, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba</p>


Device	Hettich Mikro 22R Centrifuge
Model	1110
Picture	
Application	The Hettich Mikro 22R Centrifuge is used to prepare different types of samples in the laboratory. It has the ability to adjust the speed, temperature and spin time. The application of different rotors allows the centrifugation of a large number of samples simultaneously
Technical characteristics	Analysis volume: 0.2 - 2.0 ml Temperature range: -20 ° C to +40 ° C Memory: 3 programs
Contact	Associate Professor Tanja Dujić, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba


Device	AUTOCLAVE HMT 232 N
Model	6266840*LLG
Picture	
Application	The HMT 232N is an easy-to-use semi-automatic autoclave with high reliability and safety. It is aimed for use in laboratories for sterilization of objects, liquids, etc. The chamber consists of stainless steel that is easy to clean. Several different programs can be set
Technical characteristics	<p>Available temperatures: 121 ° C and 134 ° C</p> <p>Adjustable sterilization pressure: from 0.9 to 2.1 bar.</p> <p>The following settings are available for sterilization: 4 minutes / 15 min / 30 min.</p> <p>Automatic control until the end of the sterilization process</p>
Contact	<p>Associate Professor Tanja Dujić, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory Diagnostics</p> <p>tanja.dujic@ffsa.unsa.ba</p>


Device	GFL Water Bath
Model	1003
Picture	
Application	GFL Water bath is used in the laboratory to perform analysis that require a controlled and constant incubation temperature. It is easy to use and allows rapid reaching the desired temperature
Technical characteristics	Capacity: 14l Temperature range: approx. 5 ° C above ambient to 99.9 ° C Display: LED with temperature adjustment at intervals of ± 0.1 ° C Weight: 12.5 kg
Contact	Associate Professor Tanja Dujić, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba


Device	ARCTIKO ULUF 450-2M® Ultra Low Temperature Freezer
Model	DAI 1414
Picture	
Application	ARCTIKO ULUF 450-2M® is freezer which enables storage and disposal of different types of samples at temperature: -40 °C do -86 °C.
Technical characteristics	Temperature: -40 to -86 °C Max. room temperature: 25 °C Capacity: 393 L Weight: 175 kg
Contact	Associate Professor Tanja Dujic, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba


Device	Analytical scale Mettler Toledo AT Balance
Model	AT 400
Picture	
Application	Weighing of small amounts of samples
Technical characteristics	Maximal weigh capacity: 405 g Readability: 0.1 mg Linearity: ± 0.5 mg Time of stabilization: 4-6 sec
Contact	Associate Professor Tanja Dujić, PhD, MPharm Department of Pharmaceutical Biochemistry and Laboratory Diagnostics tanja.dujic@ffsa.unsa.ba


Device	BioSan UVC/T-AR DNA/RNA UV-cleaner box
Model	BS-040102-AAA
Picture	
Application	<p>DNA / RNA UV-cleaner chamber UVC / T-AR is designed for sterile work with DNA. Chamber with UV cleaner enables protection from any kind of contamination. These chambers are equipped with UV lamp. UV radiation is disinfecting the working area by inactivating the fragments of DNA/RNA in the exposure period of 15 to 30 min. Digital timer is controlling the duration of direct UV radiation. Daylight Bulb is enabling the proper illumination on working space.</p> <p>Chambers with UV-cleaner are equipped with circulating bactericidal UV cleaner/recirculator AR which enables constant decontamination of the chamber during the working session.</p> <ul style="list-style-type: none"> • UV decontamination of high density without ozone • UV lamp with working life of around 9.000 hours • Automatic shutdown timer for UV • Bactericidal recirculator enables permanent decontamination inside chamber during the working session • Almost no noise, very energy efficient
Technical characteristics	<p>Materials of box: Plexiglas</p> <p>Level of UV radiation: 15 mW / cm² / sec</p> <p>Type of radiation: UV ($\lambda = 253.7$ nm), ozone-free</p> <p>Working surface: 645 x 490 mm</p> <p>Weight: 23/33 kg</p> <p>Energy consumption: 67 W</p>
Contact	<p>Associate Professor Tanja Dujic, PhD, MPharm</p> <p>Department of Pharmaceutical Biochemistry and Laboratory Diagnostics</p> <p>tanja.dujic@ffsa.unsa.ba</p>


Device	Biobase / Laboratory Biological Microscope
Model	XS208 Series
Picture	
Application	XS-208 Microscope is used for microscopic analysis of samples. It works on the principle of image magnification, for the purpose of easier qualitative and quantitative analysis, as well as identification of sample.
Technical characteristics	Ocular: WF10X/18mm Lens: 4x, 10x, 40x, 100x Halogen lamp Weight: 8 kg
Contact	Full Professor Kemal Durić, PhD, MPharm Department of Pharmacognosy kemal.duric@ffsa.unsa.ba


Device	UV-VIS spektrofotometar ThermoFisher Scientific / UV-VIS Spectrophotometer
Model	Evolution™ 60S
Picture	
Application	Spectrophotometric assessment of unknown analyt dilution is done on basis of luminosity absorption in visible or UV part of spectrum. Existing configuration methods are including concentration measurement as well as ratio of nucleic acids and proteins.
Technical characteristics	<p>Luminosity source: xenon lamp Width of spectral line: 1.0 nm Optical design: „dual-beam“ optical configuration with inside referent detector; Detector – twofold silicon photodiode; Measuring surface: 190-1100 nm; Rotational stand for 6 cuvettes (blank probe + 5 samples), simultaneously; Data analysis with the use of software.</p>
Contact	<p>Full Professor Kemal Durić, PhD, MPharm Department of Pharmacognosy kemal.duric@ffsa.unsa.ba</p>


Device	Rotating Vacuum Evaporator Ingos
Model	RVO 200 A / 2004
Picture	
Application	Evaporation of organic solvents (polar and nonpolar); Vacuum pump are lowering the pressure on its own.
Technical characteristics	<p>Rotavapor: Span of turns: 10-200 rpm Temperature: max. 100 °C (water) / $\pm 1^{\circ}\text{C}$ max. 180 °C (oil) / $\pm 3^{\circ}\text{C}$ Measurement: two thermometers (platinum) Difference in pressure: 50 hPa (adjustable) Weight: 16 kg</p> <p>Vacuum pump with vacuum control (working pressure 1bar, Hz: 50, kW: 120) with PTFE- membranes</p>
Contact	Full Professor Kemal Durić, PhD, MPharm Department of Pharmacognosy kemal.duric@ffsa.unsa.ba


Device	UV-viewing cabinet Spectroline®
Model	CM 24-A (CM-10A chambre with UV-lamp ENF-240C)
Picture	
Application	Observation of chromatograms obtained with thin-layer chromatography and other objects under UV light of 254nm and 365nm wave length.
Technical characteristics	<p>4W, 365nm by 300μW/cm³ and 254nm by 310μW/cm³</p> <p>Dimensions: 22.9 x 30.5 x 16.5 cm</p> <p>Weight: 3,2 kg</p>
Contact	<p>Full Professor Kemal Durić, PhD, MPharm</p> <p>Department of Pharmacognosy</p> <p>kemal.duric@ffsa.unsa.ba</p>


Device	Ultrasonic water bath Nahita
Model	611/6
Picture	
Application	Ultrasonic water „bath“ for sonication biological material, dissolution of liquids, mixing of liquids and compounds, cleaning of components.
Technical characteristics	Capacity: 6L Ultrasonic power: 250W Ultrasonic frequency: 50Hz Heater Counter: 1 - 30 min
Contact	Full Professor Kemal Durić, PhD, MPharm Department of Pharmacognosy kemal.duric@ffsa.unsa.ba


Device	Analytical scale Kern
Model	Series 770 – 15
Picture	
Application	Weighing small amount of samples
Technical characteristics	Max weigh capacity: 220g Readability: 0.1mg Reproducibility: 0.1mg Linearity: ± 0.2 mg Stabilization time: 3 sec
Contact	Full Professor Kemal Durić, PhD, MPharm Department of Pharmacognosy kemal.duric@ffsa.unsa.ba


Device	Laboratory Centrifuge Tehnica Železniki
Model	LC-320
Picture	
Application	Separation of solids from dispersant in concentrated suspensions or dispersions.
Technical characteristics	Speed: 0 - 6000 turns / min Number of places for samples: 32 Time of process: 0 - 60 min
Contact	Full Professor Kemal Durić, PhD, MPharm Department of Pharmacognosy kemal.duric@ffsa.unsa.ba


Device	Fraction collector and autosampler
Model	LAMBDA OMNICOLL
Picture	
Application	Microprocessor-controlled fraction collector – samples: Suitable for all types of chromatographic techniques (LPCL, MPLC, FPLC, HPLC, preparative HPLC; HSCCC), cell cultures, fermentations, chemical reactions, etc.
Technical characteristics	<p>Collection method: linear (line); meander (zigzag) or row accumulation.</p> <p>Mode:</p> <ul style="list-style-type: none"> i) Time: 0.1-999.9 minutes (16.67 hours) in 0.1-minute steps or 1 to 9999 minutes (166.7 hours) in 1-minute steps; ii) Volume: 0.01 to 500 mL or 0.6 to 30 L (external counting using LAMBDA peristaltic pump); iii) Remote control: the collector picks up one fraction after an external voltage impulse of 3-12 V; iv) Power supply: 95-240 V/60-50 Hz; v) Operating temperature: 0-40°C.
Contact	<p>Associate Professor Haris Nikšić, PhD, MPharm Department of Pharmacognosy haris.niksic@ffsa.unsa.ba</p>


Device	Parallel vacuum evaporator
Model	Buchi SyncorePlus Polyvap
Picture	
Application	Evaporation of analytes in solution to dryness (simultaneous evaporation of up to 96 different samples, sample preparation for further testing – analytical and biological).
Technical characteristics	Number of evaporation positions: 96; Evaporation volume: 0.5-15 mL; Rotational speed range: 60-400 rpm; Heating block temperature range: 20-70°C; Temperature accuracy: 100°C ±1°C; Power consumption: 1400 W.
Contact	Associate Professor Haris Nikšić, PhD, MPharm Department of Pharmacognosy haris.niksic@ffsa.unsa.ba


Device	A connected system of 6 heating mantles
Model	KM RE6
Picture	
Application	An integral part of laboratory equipment for distillation, extraction (Soxhlet extraction), isolation, and determination of the essential oil content of aromatic plant materials.
Technical characteristics	Housing with six positions (mantles) for heating, with a mantle capacity of 500 mL, power of 300 W, and separately controlled heating zones.
Contact	Associate Professor Haris Nikšić, PhD, MPharm Department of Pharmacognosy haris.niksic@ffsa.unsa.ba


Device	Orbital shaker for samples
Model	Heidolph Unimax 2010
Picture	
Application	Dissolution of materials, mixing of liquids, microbial cultures, and plant tissue cultures. Widely used in plant incubation, fermentation, hybridization, bacterial culture, biochemical reactions, enzyme and tissue research, or small-scale production of biological samples.
Technical characteristics	Orbital shaker with an oscillating platform, speed range: 20 – 400 rpm, maximum sample weight capacity: 10 kg.
Contact	Associate Professor Haris Nikšić, PhD, MPharm Department of Pharmacognosy haris.niksic@ffsa.unsa.ba


Device	Ultrasonic bath
Model	Bandelin DT 1018 H
Picture	
Application	Dissolving, degassing, cleaning of glassware.
Technical characteristics	A robust, electronically controlled device. Volume capacity of 28 L, temperature range of 20-80°C, ultrasonic capacity of 1200 W.
Contact	Associate Professor Haris Nikšić, PhD, MPharm Department of Pharmacognosy haris.niksic@ffsa.unsa.ba


Device	High-speed counter-current chromatography (HSCCC)
Model	Pharma Tech Research Co., Baltimore, MD, USA
Picture	
Application	<p>i) Isolation of bioactive natural compounds;</p> <p>ii) Fractionation of raw plant extracts (complex plant matrix) for qualitative simplification of fractions.</p>
Technical characteristics	<p>Preparative chromatography; The main unit of the device consists of a centrifuge with a triple self-balancing coil, with a total volume of 320 mL; the system is integrated with a digital dual-piston pump (Shimadzu LC-10ATvp) and a fraction collector with an autosampler (LAMBDA OMNICOLL, LAMBDA Instruments GmbH, Switzerland). The sample loop has a volume of 10 mL.</p>
Contact	<p>Associate Professor Haris Nikšić, PhD, MPharm Department of Pharmacognosy haris.niksic@ffsa.unsa.ba</p>


Device	Analytical balance
Model	AX 205 Delta Range, Mettler Toledo
Picture	
Application	Weighing small amounts of sample
Technical characteristics	Readability: 0.01 mg Maximum capacity: 220 g Linearity: ± 0.15 mg Stabilization time: 2-5 s Weighing range: 0-220 g
Contact	Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba


Device	UV-VIS Spectrophotometer
Model	Genesys 2, Spectronic
Picture	
Application	It is used for quantitative analysis of solutions and identification of compounds containing chromophores. This method applies to the determination of components in multicomponent mixtures, examining the kinetics of chemical reactions. It analyzes the inorganic and organic compounds dissolved in water and organic solvents, pharmaceutical products, extracts of plant drugs, food samples and biological samples.
Technical characteristics	Wavelength range: 200-1100 nm Accuracy: ± 1 nm Spectral range: 2 nm Number of sample places: 8
Contact	Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba


Device	UV-VIS Spectrophotometer
Model	UVmini-1240, Shimadzu
Picture	
Application	It is used for quantitative analysis of solutions and identification of compounds containing chromophores. This method applies to the determination of components in multicomponent mixtures, examining the kinetics of chemical reactions. It analyzes the inorganic and organic compounds dissolved in water and organic solvents, pharmaceutical products, extracts of plant drugs, food samples and biological samples.
Technical characteristics	<p>Measurement Wavelength Range: 190-1100 nm</p> <p>Wavelength Scanning Speeds: Switching wavelengths - approximately 3800 nm/min</p> <p>Wavelength scan - approximately 24-1400 nm/min</p> <p>Accuracy: ± 1.0 nm</p> <p>Spectral Band Width: 5 nm</p> <p>Wavelength setting: 0.1 nm</p> <p>Measurement method: single beam spectrophotometer</p> <p>Wavelength Repeatability: ± 0.3 nm</p> <p>Photometric Accuracy: ± 0.005 Abs (at 1.0 Abs) NIST 930D filter ± 0.003 Abs (at 0.5 Abs)</p> <p>Photometric repeatability: ± 0.002 Abs (at 1.0 Abs)</p>
Contact	<p>Full Professor Ervina Bečić, PhD, MPharm</p> <p>Department of Drug Analysis</p> <p>ervina.becic@ffsa.unsa.ba</p>


Device	UV-VIS Spectrophotometer
Model	Lambda 18, Perkin Elmer
Picture	
Application	<p>It is used for quantitative analysis of solutions and identification of compounds containing chromophores. This method applies to the determination of components in multicomponent mixtures, examining the kinetics of chemical reactions. It analyzes the inorganic and organic compounds dissolved in water and organic solvents, pharmaceutical products, extracts of plant drugs, food samples and biological samples.</p>
Technical characteristics	<p>Wavelength range: 187-900 nm Double beam spectrophotometer with two monochromators Optical unit includes: Prealigned tungsten-halogen lamp and deuterium lamp Spectral bandpas: 0.1-5 nm Large interchangeable sample compartment UV WinLab operating software provides recording, manipulation and storage of spectral data</p>
Contact	<p>Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba</p>


Device	Spectrofluorophotometer
Model	RF-5301 PC, SHIMADZU
Picture	
Application	<p>Measurement of fluorescence intensity of samples containing fluophores. Fluorescence is a very sensitive method that can detect very low concentrations of the substance (10^{-12} mol/l) and therefore the spectrofluorophotometer is used in drug analysis, biochemistry, organic chemistry, etc. Qualitative analysis is based on the comparison of excitation and emission maxima of the fluorescent substance. Quantitative analysis is based on the linear relation between intensity of fluorescence and concentration of the test substance.</p>
Technical characteristics	<p>Scanning rate: 5.500 nm/min Light source: Xenon lamp Wavelength scale: 220 – 990 nm Spectral bandwidth: 1.5, 3, 5, 10, 15 and 20 nm Wavelength accuracy: ± 1.5 nm Sensitivity: The Signal/Noise ratio is 150 or higher Response: 0.02, 0.03, 0.1, 0.25, 0.5, 2, 4 and 8 s for 98% of the full scale Interface: RS-223C Dimensions and weight: 667W x 530D x 270H mm; 43kg Dimensions of sample compartment: 140 x 170 x 140 mm Operational temperature range: 15-35°C PC Requirements: IBM-PC/AT or 100% compatible; i486 or bigger CPU; 8 Mbyte or bigger main memory. Windows version 3.1 or newer</p>
Contact	<p>Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba</p>


Device	FT-IR Spectrophotometer
Model	Cary 630 FTIR (ATR), Agilent
Picture	 <p>The image shows an Agilent Cary 630 FTIR Spectrophotometer. It is a compact, benchtop instrument with a white and black design. The main body is white, and the sample compartment and control area are black. A sample is visible in the ATR (Attenuated Total Reflectance) holder. The Agilent logo is visible on the front panel.</p>
Application	Characterization of samples in solid and semi-solid state. Determination of structure and chemical composition of unknown compounds.
Technical characteristics	<p>Interferometer: 25 mm, Michelson, 45° Interface of spectrometer: USB-2 Dimensions: 16 x 31 x 13 cm Sample interface: ATR diamond Softver: Agilent MicroLab PC software, Automated IQ/OQ, 21 CFR Part 11 compliant, Resolutions Pro for advanced data analysis Spectral range: KBr 6300–350 cm⁻¹ ZnSe 5100–600 cm⁻¹ Resolution: < 2 cm⁻¹ Wavenumber accuracy: 0.05 cm⁻¹ Wavenumber reproducibility: 0.005 cm⁻¹</p>
Contact	<p>Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba</p>


Device	Refractometer
Model	2WAJ, Optika Microscopes
Picture	
Application	Measurement of refractive index of liquids, solids and sugar solutions. The refractive index is an important optical constant used to determine the optical properties of compounds, their purity, concentration and dispersion.
Technical characteristics	<p>Main prism: Horizontal</p> <p>Refraction index scale: n_D 1.300 – 1.700</p> <p>Precision: $n_D \pm 0.0003$</p> <p>Sugars scale: 0-95%, n_D 1.300 – 1.530</p> <p>Precision: 0 – 50 % = 0.2 % ; 51 – 95 % = 0.1 %</p> <p>Thermometer scale: 0° C – 70° C, div. 1° C</p> <p>Weight: 4 kg</p> <p>Size: 140x100x235 mm</p>
Contact	<p>Full Professor Ervina Bečić, PhD, MPharm</p> <p>Department of Drug Analysis</p> <p>ervina.becic@ffsa.unsa.ba</p>


Device	Polarimeter
Model	POL X, Optika Microscopes
Picture	
Application	Measurement of specific rotation of optically active substances. Qualitative and quantitative analyses of optically active compounds.
Technical characteristics	Measuring range of optical rotation: $\pm 180^\circ$ Resolution: 1° Accuracy: 0.05° Light source: Monochromatic LED, 1.2 W, $\lambda_d = 590$ nm Length of test tubes: 100 mm 200 mm Weight: 1.7 kg Dimensions: 450 x 180 x 320 mm
Contact	Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba


Device	Microevaporator
Model	Dri Block 200/3, Techne
Picture	
Application	Rapid evaporation of solvents, preparation of samples for further analysis.
Technical characteristics	<p>Temperature range: 5 - 200° C</p> <p>Temperature stability: ± 0.15 at 100 ° C</p> <p>Nominal heating power at 240 V: 650 W</p> <p>Power supply: 115/230V 50Hz</p> <p>Timer: 1 minute to 99 hours, 59 minutes</p> <p>Rack dimensions: 295 x 240 x 530 mm</p> <p>Dri Block dimensions: 279 x 260 x 105 mm</p>
Contact	<p>Full Professor Ervina Bečić, PhD, MPharm</p> <p>Department of Drug Analysis</p> <p>ervina.becic@ffsa.unsa.ba</p>


Device	Water purifier (NEPTEC)
Model	TRITON 6
Picture	
Application	It is used to prepare ultrapure water for HPLC analysis. Ultra pure water is of a very high degree of purity (without organic and inorganic substances, microscopic particles, microorganisms and with a minimal content of dissolved gases such as oxygen and carbon dioxide) so that it is clean enough to meet strict pharmaceutical and medical standards.
Technical characteristics	<p>The possibility of direct connection to drinking water from the city water system</p> <p>Operating temperature: 2-35° C</p> <p>Water type: ASTM Type 1 and ASTM Type 2 ultrapure water</p> <p>Water flow rate: 6 l/h</p> <p>Storage capacity: 10 l</p> <p>Water leak detector</p> <p>Permeate flow measurement and monitoring</p> <p>Pressure reducer</p> <p>Data recording via USB</p> <p>Precise dosing of an adjustable amount</p> <p>Dry-run protection</p> <p>A simple disinfection procedure</p> <p>Pressure and flow sensor</p> <p>Voltage: 90-240V / 50-60Hz</p> <p>Device weight: 25 kg</p>
Contact	<p>Full Professor Ervina Bečić, PhD, MPharm</p> <p>Department of Drug Analysis</p> <p>ervina.becic@ffsa.unsa.ba</p>


Device	High Pressure Chromatography (HPLC) (Agilent)
Model	1260 Infinity II
Picture	 <p>The image shows the Agilent 1260 Infinity II HPLC system, which consists of a pump, autosampler, column oven, and detector unit stacked vertically, with a separate waste container to the right.</p>
Application	<p>Liquid chromatography is a separation method based on the different distribution of the components of the liquid mixture between the mobile and stationary phases in the column. The mobile phase is passed through the column under high pressure. The components of the mixture are separated on the basis of selective adsorption, different solubility, ion exchange, distribution by size or mass of particles and stereochemical interactions. It is used for separation, identification and quantification of substances.</p>
Technical characteristics	<p>Consumption: approximately 4.2 kWh per day</p> <ul style="list-style-type: none"> • PUMP: G7104C <p>Maximum working pressure: 800 bar Quaternary UHPLC pump Maximum number of solvents: 4 Maximum flow: 5 ml/min</p> <ul style="list-style-type: none"> • AUTOSAMPLER: G7129C <p>Maximum injection volume: 100ul Capacity: 2 plates with 66 seats each The possibility of controlling the temperature of samples (sample cooler)</p> <ul style="list-style-type: none"> • COLUMN SECTION: G7116A <p>Temperature range: 10-85° C</p> <ul style="list-style-type: none"> • DAD DETECTOR: G7115A <p>Range: 190-950nm Deuterium and tungsten lamp Number of signals: 8</p> <ul style="list-style-type: none"> • ELECTROCHEMICAL DETECTOR: DECADE LITE
Contact	<p>Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba</p>


Device	Atomic absorption spectrometer (Agilent)
Model	240Z AA
Picture	
Application	AAS is an analytical technique used to determine the amount of certain elements in a sample. It uses the principle that atoms (and ions) can absorb light at a specific, unique wavelength. When this specific wavelength of light is provided, the energy (light) is absorbed by the atom. Electrons in an atom pass from the ground state to an excited state. The amount of light absorbed is measured and the concentration of the element in the sample can be calculated.
Technical characteristics	<p>Outstanding performance down to the ppb level</p> <p>High sensitivity and elimination of interference</p> <p>Flexibility to analyze complex matrices</p> <p>Simplified, automated development of methods for optimizing analysis conditions with the SRM Wizard</p> <p>High Definition Tube-CAM for monitoring the analysis inside the graphite tube</p> <p>Improved detection limit performance</p> <p>For ultra limits of detection at trace level - application of high intensity UltrAA lamps</p> <p>Simple alignment - Only one light source is required</p> <p>Powerful 11-fold improvement in correction accuracy-Polynomial interpolation</p> <p>Wide range of uses — the ability to use VGA to Zeeman adapter and hydride generation techniques to confirm Zeeman graphite furnace AA results</p>
Contact	<p>Associate Professor Elma Omeragić, PhD, MPharm</p> <p>Department of Toxicology</p> <p>elma.omeragic@ffsa.unsa.ba</p>


Device	Ultrasonic bath Sonorex digitec (Bandelin)
Model	DT 100H
Picture	
Application	Dissolving substances, homogenizing solutions with heating.
Technical characteristics	Power supply: 230V ~ 50/60 Hz Current: 1.0 A Power: 80/320 W Frequency: 35 kHz
Contact	Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba


Device	Dryer
Model	VSMD 53, Vims Elektrik
Picture	
Application	Samples drying and preparation for further analysis.
Technical characteristics	<p>Operating volume: 53 L Compartment dimensions: 400 x 400 x 330 mm Heater power: 1000 W Operating voltage: - 230 V ($\pm 10\%$) at 50 Hz Thermoregulation (temperature control) Microprocessor digital temperature controller PID controller with LED display for setting and reading teperature Temperature setting range: -5° C from ambient to 150° C Timer: setting the operating time 0 - 100 h</p>
Contact	<p>Full Professor Aleksandra Porobić, PhD, MPharm Department of Toxicology aleksandra.porobic@ffsa.unsa.ba</p>


Device	Water bath
Model	WKP 35, Vims Elektrik
Picture	
Application	It provides chemical reactions at constant and elevated temperature.
Technical characteristics	<p> Dimensions: 600 x 400 x 350 mm Compartment: 500 x 300 x 200 mm Heater power: 2400 W Temperature: 99 ° C Volume: 35 L Precision: microprocessor control, digital, with and without timer (1 min-999 h) Raised lid that prevents dripping of condensate into the content of thermostated vessel. Flat lid with different number of openings – concentric rings. Test tube holders - rack </p>
Contact	<p> Full Professor Aleksandra Porobić, PhD, MPharm Department of Toxicology aleksandra.porobic@ffsa.unsa.ba </p>


Device	Centrifuge
Model	IEC CL 10, Thermo SCIENTIFIC
Picture	
Application	It is used to separate the solid from the liquid phase. Also it separates particles that are in the same phase and differ in mass or density.
Technical characteristics	<p> Maximum capacity: 4 x 135 ml Maximum density: 1200 kg/m³ Maximum load: 0.648 kg Maximum speed: 6500 rpm Control system: microprocessor Speed adjustment/ Display: Range: 300 – 6500 rpm Speed change in one step: 10 rpm Accuracy: ± 20 rpm Timer: 1 – 99 min Power: 150 W Volume: 57 dBa </p>
Contact	Full Professor Aleksandra Porobić, PhD, MPharm Department of Toxicology aleksandra.porobic@ffsa.unsa.ba


Device	Digital shaker
Model	Wise Shake SHO – 2D
Picture	
Application	It is used for dissolving substances and homogenizing solutions.
Technical characteristics	<p>Dimensions: 400 x 480 x 160 mm Base platform size: 350 x 350 mm Maximum load: 10 kg Rotation amplitudes: 20, 30 and 40 mm Speed: 10 – 300 rpm Display: digital LCD display (Timer, RPM and Power bar – graph) Weight: 20 kg</p>
Contact	<p>Full Professor Aleksandra Porobić, PhD, MPharm Department of Toxicology aleksandra.porobic@ffsa.unsa.ba</p>


Device	Vacuum pump
Model	KNF N026.3AN.18, Neuberger
Picture	
Application	It is used to induce and control solvent evaporation by reducing vapor pressure.
Technical characteristics	<p>Delivery rate at atmospheric pressure: 20 L/min Maximum pressure: 2.5 bar g Vacuum: 100 mbar abs. Voltage/ Frequency: 230 V / 50 Hz Power: 100 W Operating current: 0.7 A Ambient temperature: 5 – 40 ° C</p>
Contact	<p>Full Professor Aleksandra Porobić, PhD, MPharm Department of Toxicology aleksandra.porobic@ffsa.unsa.ba</p>


Device	pH meter
Model	Seven Easy S20, Mettler Toledo
Picture	
Application	pH measurement
Technical characteristics	pH range: 0.000 – 14.000 Accuracy: ± 0.004 mV: -1.999 - 1.999 Temperature: -5.0 - 105.0 °C Dimensions: 180 x 180 x 65 mm Weight: 610 g
Contact	Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba


Device	ELISA reader
Model	Asys Expert Plus, Microplate Reader
Picture	
Application	ELISA microtiter plates reader is used for automatic reading of the absorbance of solution in polystyrene microtiter plates coated with antibody or antigen. It is used to determine concentrations of antibody and antigen in samples.
Technical characteristics	<p>Speed: 5 s for 96 microplates at one wavelength Light source: 50 W Tungsten halogen lamp Detection system: 8 silicone measuring diodes Measurement system: 8-channel optical system with automatic calibration Measurement range: 0,000 OD to 4,000 OD Accuracy: $\pm 1\%$ to 2.5 OD Reproducibility and accuracy: $\pm 0.5\%$ to 2.5 OD Filters: 405, 450, 492, 620 nm (and 340 nm for UV version) Voltage: 90 - 250 V, 50.60 Hz, 80 VA Dimensions: 27 x 43 x 24 cm Weight: 12 kg</p>
Contact	<p>Full Professor Aleksandra Porobić, PhD, MPharm Department of Toxicology aleksandra.porobic@ffsa.unsa.ba</p>


Device	Liquid chromatograph (HPLC)
Model	Shimadzu HPLC sistem, VP class
Picture	
Application	<p>Liquid chromatography is a separation method based on the difference in the distribution of different components of the liquid mixture between mobile (liquid) phase, and stationary (solid or liquid) phase contained in a column. The mobile phase is pumped through column under the high pressure. The components of the mixture are separated based on the mechanisms of adsorption, different solubility, ion exchange, size and mass distribution, or stereochemical interaction. It is used for separation, qualitative and quantitative analysis of different substances. Identification is performed by comparison of retention times between samples and standards.</p>
Technical characteristics	<p>Degaser: DGU-20A5 Pump: LC-10AD Column section: CTO-10AC Detector: SPD-10AV Autosampler: SIL-10AD</p>
Contact	<p>Full Professor Aleksandra Porobić, PhD, MPharm Department of Toxicology aleksandra.porobic@ffsa.unsa.ba</p>

Device	Gas chromatograph (GC) with thermal conductivity detector and electron capture detector
Model	7890A, Agilent Technologies
Picture	
Application	<p>Gas chromatography is a separation method based on a different distribution of the components between the stationary (solid or liquid) and mobile phases (carrier gas). Thermal conductivity detector (TCD) measures the changes in thermal conductivity of carrier gas, measured current signal is proportional to the concentration of the component in carrier gas. Electron capture detector (ECD) measures the reduction of current signal proportional to the concentration of the component which captures the electron, caused by ionization of the carrier gas by radioactive radiation beams. It is used for identification and quantification of gas samples and thermostable organic compounds.</p>
Technical characteristics	<p>Retention time repeatability: < 0.008% or < 0.0008 min Injector: 7683B Dimensions: 28 × 31 × 16 cm Ambient temperature: 4 °C to 450 °C Maximum analysis: 999.99 min (16.7 h) Basic components are gas carrier in a bottle, regulators of the gas flow rate, injector, thermostat, column, TCD detector, ECD detector.</p>
Contact	<p>Full Professor Aleksandra Porobić, PhD, MPharm Department of Toxicology aleksandra.porobic@ffsa.unsa.ba</p>


Device	UV Lamp
Model	74527, DESAGA Heidelberg
Picture	
Application	It is used to visualize samples applied to TLC plates. The visualization is performed at 254 nm and 356 nm.
Technical characteristics	V: 220 W: 60 Nr: 74527 UV/VIS: 254/366 nm
Contact	Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba


Device	Dryer
Model	Sutjeska
Picture	
Application	Drying and preparation of laboratory equipment
Technical characteristics	T_{\max} : 200 °C
Contact	Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba


Device	Magnetic stirrer
Model	42071, TMA CE
Picture	
Application	Dissolution of substances. This device uses rotating magnetic field to cause stirring and homogenize the solution.
Technical characteristics	<p> Dimensions: 150 x 150 x 100 mm Speed: 80 – 1600 rpm Weight: 2.5 kg Voltage: 230 V Frequency: 50 Hz Heating plate diameter: 130 mm Temperature range: 0 – 300 °C </p>
Contact	<p> Full Professor Ervina Bečić, PhD, MPharm Department of Drug Analysis ervina.becic@ffsa.unsa.ba </p>


Device	Conductometer
Model	HI 8733
Picture	
Application	Measuring electrical conductivity in solutions
Technical characteristics	<p>Measuring range: 0.0 – 199.9 $\mu\text{S}/\text{cm}$ Resolution: 0.1/1 $\mu\text{S}/\text{cm}$ Accuracy: 1% Dimensions: 185 x 82 x 45 mm Weight: 355 g Battery life: 100 h Ambient temperature: 0 – 50 °C</p>
Contact	<p>Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba</p>


Device	Thermostat
Model	WBS Fried Electric, P.O.B. 25169 - Haifa
Picture	
Application	Maintaining the temperature in the range of 10 – 110 °C
Technical characteristics	Temperature range: 10 – 110 °C Capacity: 4.3 L
Contact	Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba


Device	Thermostat
Model	M 100, HAAKE, Boehringer Ingelheim Diagnostika
Picture	
Application	Maintaining the temperature in the range of -30 – 110 °C
Technical characteristics	Temperature range: -30 – 100 °C Capacity: 10 L S/N 8509195 AMP: 315 mAT V: 220 ± 10 % Hz: 50/60
Contact	Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba


Device	pH meter
Model	HI8314, Hanna Instruments
Picture	
Application	pH measurement
Technical characteristics	<p> pH range: 0.00 – 14.00 ORP: + or – 1999 mV Temperature range: 0.0 – 100.0 °C pH resolution: 0.01 ORP resolution: 1 mV Temperature resolution: 0.1 °C pH accuracy: ± 0.01 ORP accuracy: $\pm 1\text{mV}$ ATC range: 0 – 70 °C Dimensions: 145 x 80 x 36 mm Weight: 230 g </p>
Contact	<p> Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba </p>


Device	Magnetic stirrer
Model	Magnetmix 2070
Picture	
Application	Dissolution of substances. This device uses rotating magnetic field to cause stirring and homogenize the solution.
Technical characteristics	Speed: 60 – 1600 rpm Power: 50 W Frequency: 50 Hz
Contact	Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba


Device	UV lamp
Model	UVLS-24
Picture	
Application	It is used in the identification of bacteria, optical measurements, fluorescence, TLC identification and in biochemical testing.
Technical characteristics	Dimensions: 249 x 97 mm Wavelength: 254 nm, 365 nm Lighting type: Handheld lamp Voltage: 115 V Amperage: 0.16 A
Contact	Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba

Device	Vacuum pump
Model	KNF N022 AN18
Picture	
Application	It is used to induce and control solvent evaporation by reducing vapor pressure.
Technical characteristics	<p>Maximum flow rate at atmospheric pressure: 15 L/h</p> <p>Maximum pressure: 4 bar</p> <p>Vacuum: 100 mbar</p> <p>Voltage/ Frequency: 240 V / 50 Hz</p> <p>Power: 80 W</p> <p>Dimensions: 194 x 203 x 103 mm</p> <p>Weight: 4 kg</p>
Contact	<p>Full Professor Šaćira Mandal, PhD</p> <p>Department of Chemistry in Pharmacy</p> <p>sacira.mandal@ffsa.unsa.ba</p>


Device	Vacuum pump
Model	KNF N026.3AN.18, Neuberger
Picture	
Application	It is used to induce and control solvent evaporation by reducing vapor pressure.
Technical characteristics	<p>Delivery at atmospheric pressure: 20 L/min</p> <p>Maximum pressure: 2.5 bar g</p> <p>Vacuum: 100 mbar abs.</p> <p>Voltage/ Frequency: 230 V / 50 Hz</p> <p>Power: 100 W</p> <p>Operating current: 0.7 A</p> <p>Ambient temperature: 5 – 40 ° C</p>
Contact	<p>Full Professor Šaćira Mandal, PhD</p> <p>Department of Chemistry in Pharmacy</p> <p>sacira.mandal@ffsa.unsa.ba</p>


Device	Vacuum pump
Model	KNF D-79112 Freiburg, N022 AT.18
Picture	
Application	It is used to induce and control solvent evaporation by reducing vapor pressure.
Technical characteristics	<p>Maximum flow rate at atmospheric pressure: 13 L/min</p> <p>Maximum pressure: 4 bar g</p> <p>Vacuum: 100 mbar</p> <p>Voltage/ Frequency: 100 V / 50/60 Hz</p> <p>Power: 140 W</p>
Contact	<p>Full Professor Šaćira Mandal, PhD</p> <p>Department of Chemistry in Pharmacy</p> <p>sacira.mandal@ffsa.unsa.ba</p>


Device	pH meter
Model	Inolab, 720 wtw
Picture	
Application	pH measurement
Technical characteristics	<p> Dimensions: 230 x 210 x 70 mm Weight: 850 g Storage temperature: -25 - +65 ° C Operating temperature: 0 - 55 ° C Maximum relative humidity: <75 % pH range: -2 - +16 pH accuracy: ± 0.01 </p>
Contact	<p> Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba </p>


Device	Handheld spectrophotometer	
Model	Spectro 2, Riedel de Haen	
Picture		
Application	<p>It is used for quantitative analysis of solutions and identification of compounds containing chromophores. This method applies to the determination of components in multicomponent mixtures. It analyzes the inorganic and organic compounds dissolved in water and organic solvents, pharmaceutical products, extracts of plant drugs, food samples and biological samples.</p>	
Technical characteristics	<p>Wavelengths: 480/565/585/635 nm Accuracy: electro – optical 1% \pm 2 units in the range of 0.100 - 1,000 extinction Cuvettes: 16 mm round cuvettes</p>	
Contact	<p>Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba</p>	


Device	Annealing furnace
Model	Nabertherm L 1/12/R6
Picture	
Application	Annealing of samples
Technical characteristics	<p>Control type: digital Frequency: 50/60 Capacity: 1 L Chamber depth: 11.4 cm Maximum temperature: 1200 ° C</p>
Contact	<p>Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba</p>


Device	Analytical balance
Model	Sartorius
Picture	
Application	Weighing small amounts of sample
Technical characteristics	Readability: 0.01 mg Maximum capacity: 210 g Linearity: (0.03)/0.1/0.2 mg
Contact	Full Professor Šaćira Mandal, PhD Department of Chemistry in Pharmacy sacira.mandal@ffsa.unsa.ba


Device	UV-1601 Spectrophotometer
Model	Shimadzu UV-1601/ Cat.No. 206-67001-34
Picture	
Application	Spectrophotometric determination of unknown concentration of analyte solutions based on light absorption in the visible or UV part of the spectrum. Existing configuration methods also include measuring the concentration and ratio of nucleic acids and proteins.
Technical characteristics	External dimensions: 450 x 590 x 430 mm Wavelength range: 190-1100 nm 50W halogen lamp Detector: Silicone photodiode Photometric modes: Abs, T%, E
Contact	Associate Professor Ognjenka Rahić, PhD, MPharm Department of Pharmaceutical Technology ognjenka.rahic@ffsa.unsa.ba


Device	HPLC
Model	Shimadzu SIL – 10AD VP
Picture	
Application	A chromatographic method used to separate mixtures, in which the ingredients to be separated are distributed between two phases. The two phases by which the ingredients are separated in chromatography are: the stationary or stationary phase and the mobile or mobile phase.
Technical characteristics	Volts: 230 HZ. 50/60
Contact	Associate Professor Ognjenka Rahić, PhD, MPharm Department of Pharmaceutical Technology ognjenka.rahic@ffsa.unsa.ba


Device	Dissolution tester
Model	ERWEKA DT GmbH/ No.60838
Picture	
Application	The dissolution tester is used to test the release of the active principle from the pharmaceutical form. Basically, the dissolution test is an analysis of the concentration of active ingredients of solid oral forms in a solution released in a certain period of time with reference substances or standards of active ingredients for that product.
Technical characteristics	USP methods 1 (basket apparatus) and 2 (blade apparatus) Sample vessel capacity 1000 mL 1 sample container
Contact	Associate Professor Ognjenka Rahić, PhD, MPharm Department of Pharmaceutical Technology ognjenka.rahic@ffsa.unsa.ba


Device	Disintegration apparatus
Model	ERWEKA ZT3
Picture	 <p>The image shows the ERWEKA ZT3 disintegration apparatus. It consists of a base unit with a digital display and control buttons, and a separate test unit mounted on top. The test unit has a transparent cylindrical container where tablets are placed, and a mechanical arm that moves up and down to disintegrate the tablets. The base unit is labeled 'ERWEKA ZT3'.</p>
Application	<p>The apparatus is used for testing the disintegration of tablets (disintegration of tablets implies their disintegration into smaller granules or particles in a suitable medium). Water heated to 37°C is used as the most common medium, while other media simulating the conditions prevailing in the gastrointestinal tract (pepsin, hydrochloric acid, peristalsis and body temperature 37°C) can be used until the tablets completely disintegrate in the medium.</p>
Technical characteristics	<ul style="list-style-type: none"> -the test unit has six places for placing cylindrical specimens at the bottom of which there is a net -one unit is in a separate container (volume 1000 mL) which is immersed in a thermostated water bath made of resistant acrylic glass so that the whole process can be monitored visually
Contact	<p>Associate Professor Ognjenka Rahić, PhD, MPharm Department of Pharmaceutical Technology ognjenka.rahic@ffsa.unsa.ba</p>


Device	Vibrating sieve
Model	ERWEKA VT/VS
Picture	
Application	<p>The vibrating sieve is used for automated sieving of materials of different particle sizes, by vibrating rotation of the housing of the apparatus (principle of horizontal shaking). The use of a series of sieves with different opening sizes enables precise determination of particle size distribution, as well as fractionation of a certain particle size of material and particle size quantification, the results of which can play an important role in ensuring the success of subsequent operations. Wet dry granules and other substances and excipients can be sieved.</p>
Technical characteristics	<ul style="list-style-type: none"> -series of standard sieves, size 0.25-12 mm -manual adjustment of sieve duration and vibration intensity
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Device	Planetary mixer
Model	ERWEKA/PRS
Picture	
Application	The planetary mixer is used to mix viscous liquids, ointments, creams, pastes, and liquids and powders. The mixing element moves around the axis of the vessel and around its axis, so that the mixer comes into contact with the entire mass of liquid, causing intensive mixing of viscous liquids and fats.
Technical characteristics	<ul style="list-style-type: none"> -connect to drive unit type AR400 by screwing all 4 brackets - 2 mixing bowls made of stainless steel with a volume of 5L -stainless steel mixing attachments: whisk (liquid mixing), mixing paddle mixing mixer (mixing powders and greases), -shoe blade Teflon cleaning (scrapping)
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Device	Cube mixer
Model	ERWEKA/KB 15-UG
Picture	
Application	<p>The mixer cube is used to mix solid materials (powders). It works on the principle of overturning solid material in order to mix and homogenize the mixture. Mixing is very gentle and the apparatus is suitable for dependently sensitive materials.</p>
Technical characteristics	<ul style="list-style-type: none"> -Connect to ERWEKA drive unit type AR 400 - a plexiglass container in the shape of a cube with a volume of 3.5 L -three stainless steel bars that are positioned inside the cube and aid mixing -maximum sample capacity 1.5 kg - the hand lever allows setting the angle of the mixing bowl between 0° and 45° -manual speed adjustment
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Device	Apparatus for determining the firmness of tablets
Model	ERWEKA/TB 24
Picture	
Application	The device is used to test the strength of tablets, which directly depends on the pressure during tableting, the type of binders, the method of preparation of granules, the moisture content of granules, the properties of the compressed substance and the shape of tablets. completely destroy. When the tablet breaks, the motor is stopped by the micro-device, and the hand, connected by the micro-device, shows the exact value of the pressure at the moment of fracture.
Technical characteristics	-2 test inserts (a test insert with a smaller groove is used to test tablets up to 10 mm in diameter, and another with a test groove for testing tablets larger than 10 mm in diameter) -maximum force 150 N
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Device	Apparatus for molding suppositories and lipsticks
Model	ERWEKA/SG III W
Picture	
Application	This apparatus is designed for the production of suppositories, lipsticks and similar products. Mixing and heating are achieved in one operation and are not interrupted during the filling process. The molds to be filled are placed on a platform under the dispensing nozzle. The handwheel allows the operator to move the platform and thus the mold in both axes.
Technical characteristics	<ul style="list-style-type: none"> -mixing bowl (volume 5 L, working capacity max. 65%) -oil bath with thermostatically controlled heater (temperature can be adjusted in the range from 20 °C to 100°C).
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Device	Friability tester
Model	ERWEKA/TA
Picture	
Application	The apparatus is used to determine the wear of tablets. Tablet wear is tested on compressed, uncoated tablets. Consumption is defined as the percentage of weight loss of tablets relative to mechanical action during testing.
Technical characteristics	<ul style="list-style-type: none"> -the appliance consists of a drum, a motor and a built-in time clock -the drum is made of plexiglass, 20 cm in diameter -speed speed 20 rpm - blades are built into the drum which, when the drum rotates, raise the tablets to a certain height, and then lower them without hitting each other.
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Device	High speed mixer granulators
Model	ERWEKA/SW1 GmbH/ No.64391
Picture	
Application	The high speed mixer granulator is used for mixing liquids and powders / granulation.
Technical characteristics	<ul style="list-style-type: none"> -device with stationary mixing chamber -slower sharp mixer or scraper - mixes material and eliminates blind spots, -fast mixer - chopper - mixes the material in more detail and homogenizes it -the chopper is placed sideways in the bowl and rotates independently of the other elements of the mixer
Contact	<p>Associate Professor Ognjenka Rahić, PhD, MPharm Department of Pharmaceutical Technology ognjenka.rahic@ffsa.unsa.ba</p>


Device	Dissolution tester
Model	Erweka DH 1520 Light
Picture	
Application	<p>The dissolution tester is used to test the release of the API from the pharmaceutical dosage form. Basically, dissolution testing is testing the concentration of active ingredients from pharmaceutical forms in a solution that is released over a certain period of time. Based on the obtained results as a function of time, a dissolution profile is constructed which is then compared with reference substances or standards of active components for that product.</p>
Technical characteristics	<p>USP methods 1, 2 Vessel volume: 1000 mL 6 Vessels Temperature: 30 - 50 °C ($\pm 0,2$ °C) Mixing speed: 20 - 250 rpm External heater</p>
Contact	<p>Associate Professor Ognjenka Rahić, PhD, MPharm Department of Pharmaceutical Technology ognjenka.rahic@ffsa.unsa.ba</p>


Device	High shear lab mixer
Model	Silverson L5M-A
Picture	
Application	Mixing, emulsification, homogenization of different pharmaceutical forms
Technical characteristics	Capacity: 50 mL - 10 L Maximum speed: 10,000 rpm Motor: 1hp (750W) 110 V -3 types of mixing workheads
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Device	Homogenizer
Model	FagronLab Gako Unguator Basic
Picture	
Application	Device for homogenization and mixing; various pharmaceutical preparations can be made on the device, such as ointments, creams, emulsions, pastes, gels, etc.
Technical characteristics	<p>Maximum sample volume – 500 mL</p> <p>Manual vertical lifting of the pots</p>
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Device	Semi-automatic capsule filling machine
Model	FagronLab
Picture	
Application	Capsule filling
Technical characteristics	The basic set consists of filler Base, orienter base, powder tray, tamper and powder spreaders - caps tray for 00 capsule size
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Device	Vertical laminar flow cabinet
Model	FagronLab LF-500 UV
Picture	
Application	Aseptic production of pharmaceutical dosage forms
Technical characteristics	HEPA filter, prefilter Air circulation speed 0.3-0.6 m/s Internal lighting with an 8W LED lamp Sterilization with a UV lamp Noise <60 dB
Contact	Associate Professor Ognjenka Rahić, PhD, MPharm Department of Pharmaceutical Technology ognjenka.rahic@ffsa.unsa.ba


Device	Dermal absorption (percutaneous permeation) apparatus – vertical glass diffusion cells (Franz diffusion cells)
Model	PermeGear V9-CB-02, SES GmbH
Picture	
Application	Percutaneous permeation/dermal absorption studies and release of substances from topical preparations
Technical characteristics	9 jacketed vertical Franz cells with standard opening diameter of 15 mm, flat bottom 7,5 ml receptor volume, including stirbars (magnetic stirrers); 9-station 230 V, Franz cell magnetic stirrer with aluminum or stainless steel cell holders; water heater/circulator with thermostat adapted to diffusion cell system temperature range +20 to +90°C
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Device	Transepidermal water loss (TEWL) measuring apparatus
Model	VapoMeter Delfin, Delfin Modular Core Software
Picture	
Application	Measurement of TEWL over the membrane on Franz diffusion cells; measuring TEWL on the skin
Technical characteristics	Measuring unit for measuring TEWL on the Franz diffusion cells and directly on the skin; wide measuring range – precise to 200 g/m ² h; not sensitive to the ambient air flow; with appropriate software.
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Device	Rotavapor
Model	IKA, RV 10 D S99
Picture	
Application	Evaporation of liquid samples
Technical characteristics	Rotation speed: 20 - 280 rpm Water / oil bath: 20 - 180 ° C
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Device	Dryer
Model	FMU Sutjeska, 75913
Picture	
Application	Drying of laboratory equipment and samples.
Technical characteristics	T_{\max} : 220 °C kW: 0,8 A: 3,6
Contact	Full Professor Selma Špirtović - Halilović, PhD, MPharm Department of Pharmaceutical Chemistry selma.spirtovic-halilovic@ffsa.unsa.ba


Device	Water bath
Model	Witeg, WB-22
Picture	
Application	It enables chemical reactions to take place at a constant and elevated temperature.
Technical characteristics	Dimensions: 535 x 330 x 260 mm Working space: 500 x 295 x 150 mm Heater power: 2 kW Temperature: 100 ° C Volume: 22 L
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Device	Vacuum pump
Model	KNF Neuberger, N816.3KT.18
Picture	
Application	It is used to induce and control solvent evaporation by reducing vapor pressure
Technical characteristics	P_{\max} : 0,5 bar n: 3000 rpm Hz: 50 W: 100 Motortype: M37
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Device	Vacuum pump
Model	KNF Neuberger, N820.3FT.40.18
Picture	
Application	It is used to induce and control solvent evaporation by reducing vapor pressure
Technical characteristics	P_{\max} : 1 bar n: 3000 rpm Hz: 50 kW: 0,120 Motortype: I56
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Device	Digital shaker
Model	Heidolph, Promax 1020
Picture	
Application	It is used for dissolving substances and homogenizing solutions.
Technical characteristics	<p>Dimensions: 320 x 375 x 125mm</p> <p>Base platform size: 290 x 258 mm</p> <p>Maximum load: 5 kg</p> <p>Rotation amplitudes: 32 mm</p> <p>Speed: 20 - 250 rpm</p>
Contact	<p>Full Professor Selma Špirtović - Halilović, PhD, MPharm</p> <p>Department of Pharmaceutical Chemistry</p> <p>selma.spirtovic-halilovic@ffsa.unsa.ba</p>


Device	pH meter
Model	SevenEasy pH, Mettler Toledo
Picture	
Application	pH value measurement
Technical characteristics	Measurement range: 0.000 - 14.000 Accuracy: ± 0.004 mV: -1,999 - 1,999 Temperature: -5.0 - 105.0 ° C Dimensions: 180 x 180 x 65 mm Weight: 610 g
Contact	Full Professor Selma Špirtović - Halilović, PhD, MPharm Department of Pharmaceutical Chemistry selma.spirtovic-halilovic@ffsa.unsa.ba

Device	UV Lamp with cabinet
Model	Vilber, VL-6.C, CN-6
Picture	
Application	It is used to visualize samples applied to TLC plates. The observation is performed at 254 nm.
Technical characteristics	Wavelength [nm]: 254 Filter size [mm]: 145 x 48 Power [W]: 1 x 6 Cabinet: External dimensions: 30 x 28 x 24 cm
Contact	Full Professor Selma Špirtović - Halilović, PhD, MPharm Department of Pharmaceutical Chemistry selma.spirtovic-halilovic@ffsa.unsa.ba

Device	Magnetic stirrer
Model	Witeg, WiseStir MSH-20D
Picture	
Application	Dissolution of substances and homogenization of the solution by stirring on the principle of a rotating magnetic field.
Technical characteristics	Heating plate dimensions: 180 x 180 mm Speed: 80 - 1500 rpm Capacity: 20 L Voltage: 230 V Frequency: 50/60 Hz Temperature range: 0 - 380 ° C
Contact	Full Professor Selma Špirtović - Halilović, PhD, MPharm Department of Pharmaceutical Chemistry selma.spiritovic-halilovic@ffsa.unsa.ba

Device	Analytical balance
Model	OHAUS Pioneer, PA2102
Picture	 A photograph of an OHAUS Pioneer PA2102 analytical balance. It is a white, compact device with a stainless steel weighing pan on top. The front panel features a digital display showing '0.00 g' and several control buttons including 'Unit', 'Mode', 'Zero', 'Print', and 'On/Off'. A large, semi-transparent watermark 'INDOGAMA.COM' is overlaid across the center of the image.
Application	Weighing samples
Technical characteristics	Readability: 0.01 g Maximum capacity: 2100 g Linearity: ± 20 mct Plate diameter: 18 cm
Contact	Full Professor Selma Špirtović - Halilović, PhD, MPharm Department of Pharmaceutical Chemistry selma.spiritovic-halilovic@ffsa.unsa.ba

Device	Apparatus for determining the melting temperature
Model	Krüss Optronic, KSP I D
Picture	
Application	Determination of melting temperature in glass capillaries
Technical characteristics	<p>Measuring range: 30–360 ° C</p> <p>Accuracy: ± 0.3 ° C (30–200 ° C) ± 0.5 ° C (200–360 ° C)</p> <p>Resolution: 0.1 ° C</p> <p>Warm-up speed: 1 ° C per minute</p> <p>Capillary \varnothing: 1.4 mm</p> <p>Dimensions (w x h x d): 230 mm x 320 mm x 210 mm</p> <p>Weight: 2.3 kg</p>
Contact	<p>Full Professor Selma Špirtović - Halilović, PhD, MPharm</p> <p>Department of Pharmaceutical Chemistry</p> <p>selma.spiritovic-halilovic@ffsa.unsa.ba</p>

Device	Kofler apparatus for determining the melting temperature
Model	Reichert Austria, Kofler aparat
Picture	
Application	Determination of melting temperature
Technical characteristics	Measuring range: 50–350 ° C
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