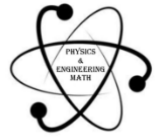


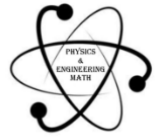
# Higher Institute of Engineering in El Shorouk City

Department of Engineering Mathematics  
and Physics

Laboratories Guide

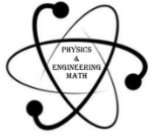
2023- 2024  
MICROSOFT



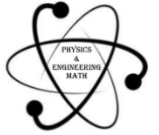


## Physics laboratories for the preparatory year

No.	Lab Name/ The name of the technician specialized in the laboratory	Area in square meters	List of available devices	counts	List of experiments carried out in the laboratory for physics courses 1 and 2	Notes
1	Physics Lab Preparatory year <b>lab322</b> <b>lab417</b> <b>lab416</b> <u>Technician</u> 1- Hazem Nabil Al Sayed Ali  2- Yasser Atef Abdel Wahed	88 60 65	Simple Pendulum - Metal Stand – Stopwatches - Metric Ruler	16	1-Determination of the acceleration of gravity using the simple pendulum	
			Spring hook coil - metal holder with scale - block of different weights	16	2-Verification of Hook's law and the modulus of elasticity of the wire	
			Special Holder - Steel Wire - Cylindrical Block - Stopwatches - Metric Ruler	8	3- Determination of the hardness coefficient of a material	
			Stocke's tube - special holder - stopwatches - metric ruler - metallic balls of different diameter - micrometer	14	4- Determination of the viscosity coefficient of a liquid by Stokes method	
			Electric heater - thermometer - stopwatches - experiment of the longitudinal coefficient of expansion in the rod - boiling calorimeter	10	5- Determination of the coefficient of longitudinal expansion of a material	
			Joule calorimeter - sensitive balance - mass of different weights - stopwatches	8	6- Determination of the thermomechanical equivalent (Joule equivalent)	
			Voltage Source – Multimeter- Voltmeter- Rheostat - unknown resistance	8	7- Verification of Ohm's law and set an unknown resistance	
			Voltage Source - Multimeter - Resistor Box - Multi Resistors	7	8- Kirchhoff's legal investigation	

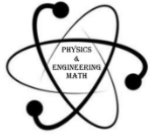


		Voltage Source - Multimeter - Voltmeter - Metric Bridge - Millimeter	8	9- Determination of the specific resistance of a wire using the metric bridge	
		Voltage Source-Multi-gauge Avometer-Voltmeter-Tangential Galvanometer	6	10-Determination of the sensitivity coefficient of the Tangential Galvanometer	
		Voltage Source - Multimeter Vomiter - Voltmeter - Restate - Resistor Box	8	11-Set the internal resistance of the voltmeter	
		Deflection magnetometer - horizontal wooden ruler-small magnet		12. Determination of the magnetic moment of a magnet	
		Newton boiler for cooling – calorimeter – thermometer	10	13- Newton's cooling experiment	
		Specific heat experiment boiler by mixing – calorimeter – thermometers- the material of unknown Specific heat	10	14- Determination of the Specific heat of a solid by mixing method	
		Lee Experience Boiler - Metal Disc - Steam Room - 2 Discs of Insulating Material	10	15- Thermal conductivity coefficient Lee	

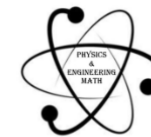


## Physics laboratories for the first year

No.	Lab Name/ The name of the technician specialized in the laboratory	Area in square meters	List of available devices	counts	List of experiments carried out in the laboratory for physics courses 3 and 4	Notes
2	Physics Lab for First Year	36 36	Full Laser Experiment kit – Light screen	5	1- Determination of the wavelength of the laser beam using the diffraction phenomenon	
	<b>Lab 104D</b> <b>Lab 105D</b>		Spectrometer - Mercury Bulb- diffraction grating	4	2- Determination of the wavelength of the light spectrum	
	<b>Technician</b>		Traveling microscope - Sodium bulb- Newton's rings setup	8	3- Determining the wavelength of monochromatic light using Newton's rings	
	1-Walid Fathy		Oscilloscope – Voltmeter – Voltage Source – Rheostat	8	4- Calibration of the oscilloscope	
	2-Azza Karam Kamel		Set of Tuning fork - graduated cylinder	6	5- Determining the speed of sound in the air with air columns	
			Voltage source - Mild coil - mass of different weights	2	6. Determining the frequency of a supplied current source using Mild	
			Photovoltaic cells - Included light table - Battery light source - Voltmeter	5	7- Verification of the inverse square law using photocell	
			Avometer - voltage source - Rheostat - bulb 12V	3	8- Verification of Stephan's law of radiation	
			Photovoltaic cells - Included light table - Battery light source - Voltmeter	5	9. Determination of the absorption coefficient of a transparent material	
			Avometer - voltage source- Diode- Rheostat	10	10- The Characteristic curve of the Diode	

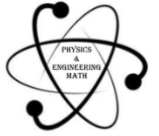


			Full Laser Experiment kit – Light screen	5	11. Young's Double Slit Experiment	
			Compound pendulum	5	12. Determining the acceleration due to gravity using a compound pendulum	



## English Technical Language Labs

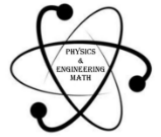
No.	Lab Name/ The name of the technician specialized in the laboratory	Area in square meters	List of available devices	List of experiments carried out in the laboratory for a technical English course 1 and 2	Notes
<b>3</b>	<p><b>English Technical Language Labs</b></p> <p><b>Lab 418</b> <b>Lab 419</b></p> <p><b>Instructors</b></p> <p><b>Hanan Yusuf Abd El-Hamid</b></p>	<p><b>35</b> <b>35</b></p>	<p><b>Each laboratory contains:</b></p> <p><b>30 cabins</b> <b>1 Sound Machine</b> <b>2 Earphones</b> <b>2 wired microphones</b></p>	<p><b>Explanation of the rules of listening English</b></p>	



## Computer Labs

No.	Lab Name/ The name of the technician specialized in the laboratory	Area in square meters	List of available devices	List of experiments carried out in the laboratory	Notes
1	<b>Computer Labs</b>  <b>Lab 228</b> <b>Lab 229</b> <b>Lab 230</b>  <u>Technician</u>  <b>Abdulla Mohammed</b> <b>Abdulla</b>	  <b>35</b> <b>35</b> <b>35</b>	Each lab contains 30 computers	First Semester: ICDL  Second Semester: Auto CAD - 2D Engineering Drawing and Projection 2	





## Engineering drawing halls

No.	Lab Name/ The name of the technician specialized in the laboratory	Area in square meters	List of available devices	List of experiments that take place in the laboratory for an engineering drawing and projection course 1 and 2	Notes
1	Engineering drawing halls:  Hall 0039  <u>Technician</u>  Fouad Musaad Al Maliki Mohamed Salah Barakat Ahmed Sami Al Sohabi	90	drawing halls:  Desk –Chair –Drawing board 4 - whiteboard.  <b>Wooden models:</b>  • Models showing the following: 1-Projections 2-Stereoscopes 3-Sectors 2-Steel structures models illustrate: Projections, models, and sectors	Representation of a Point and Its Projection onto Three Planes	
				The Basis of Projections	
				Representation of the Straight Line	
				Finding the True Length of the Line from Projections	
				Finding the Angles of Inclination of the Straight Line	
				Special Positions of the Straight Line	
				Relative Positions of Lines to Each Other	
				Representation of the Plane in the General Position	
				Positions of Points and Lines within the Plane	
				Special Positions of the Plane	
				Line of Greatest Slope	
				Determining the Intersection Line of Two Planes	
				How to Draw a Plane that Passes Through a Given Point and is Parallel to Another Plane	
				Determining the Intersection Point of a Line with a Plane	
Projecting a Perpendicular from a Point Outside a Plane onto the Plane and Calculating its Length					
Erecting a Perpendicular from a Point within a Plane onto Another Plane with a Given Length					
Rotation					
Auxiliary Projection					