STEM PRODUCTS

est.2024

PHYSICS

LABORATORY EQUIPMENT





- MECHANICS
- OPTICS
- ELECTRICITY
- THERMODYNAMICS

NEW

MECHANICS TRAINING KIT

- INCLUDES A WIDE RANGE OF TOPICS, SUCH AS MEASURING DIMENSIONS AND MASS, EXPLORING FORCES, MOTION, FRICTION, ELASTIC FORCES, AND THE LAWS OF MECHANICS.
- COVERS EXPERIMENTS LIKE STUDYING LEVERS, INCLINED PLANES, AND THE LAW OF CONSERVATION OF ENERGY.
- THE DYNAMIC SYSTEM ENABLES PRECISE MEASUREMENTS OF MOTION, SPEED, AND ACCELERATION, ALONG WITH ADDITIONAL EQUIPMENT FOR DEMONSTRATING VARIOUS MECHANICAL PHENOMENA.



MECHANICS

EXPERIMENTS

1. MEASURING THE DIMENSIONS OF SMALL BODIES
2. DETERMINING THE SURFACE AREA OF A BODY
3. MEASURING THE VOLUME OF A LIQUID
4. MEASURING MASS WITH ELECTRONIC SCALES
5. DETERMINING THE DENSITY OF ALUMINIUM
6. DETERMINING THE DENSITY OF LIQUIDS
7. MEASURING FORCES WITH A DYNAMOMETER
8. DETERMINING THE DENSITY OF A SUBSTANCE WITH A DYNAMOMETER
9. EQUILIBRIUM OF BODIES WITH A FIXED AXIS OF ROTATION
10. STUDY OF THE ACTION OF A LEVER
11. STUDY OF THE ACTION OF A MOVABLE BLOCK
12. STUDY OF THE ACTION OF A FIXED BLOCK
13. STUDY OF THE ACTION OF AN INCLINED PLANE
14. STUDY OF THE GOLDEN RULE OF MECHANICS
15. ADDITION OF FORCES DIRECTED ALONG ONE STRAIGHT LINE
16. ADDING FORCES DIRECTED AT AN ANGLE
17. STUDY OF THE ACTION OF A LIQUID ON A SUBMERGED BODY
18. MEASUREMENT OF THE ARCHIMEDEAN FORCE
19. FINDING OUT THE CONDITIONS OF FLOATING OF A BODY IN A LIQUID
20. INVESTIGATING THE FORCE OF FRICTION
21. MEASUREMENT OF THE COEFFICIENT OF SLIDING FRICTION
22. INVESTIGATION OF THE ELASTIC FORCE
23. MEASUREMENT OF SPRING STIFFNESS
24. INVESTIGATION OF THE DEPENDENCE OF THE FORCE OF GRAVITY ON THE MASS OF A BODY
25. INVESTIGATION OF THE OSCILLATIONS OF A STRING PENDULUM
26. MEASUREMENT OF THE ACCELERATION OF FREE FALL
27. INVESTIGATION OF THE OSCILLATION OF A SPRING PENDULUM
28. OBSERVATION OF PHENOMENA IN INERTIAL AND NON-INERTIAL FRAMES OF REFERENCE
29. VERIFICATION OF NEWTON'S SECOND LAW
30. STUDY OF THE PHENOMENON OF OVERLOADING
31. STUDY OF NEWTON'S THIRD LAW
32. STUDY OF THE LAW OF CONSERVATION OF TOTAL MECHANICAL ENERGY





MECHANICS

MECHANICS TRAINING KIT

COMPONENTS



1X SET FOR STUDYING ARCHIMEDES LAW
1X GLASS BEAKER, 250 ML
1X MEASURING CYLINDER, 50 ML
1X PLASTIC BEAKER, 250 ML
1X RAG
1X BOTTLE, 50 ML
1X ELECTRONIC SCALES, 100 G, 0,001 G
1X TRANSPONTIR
1X DIGITAL TIMER
1X ELECTROMAGNET FOR DIGITAL TIMER
2X OPTICAL SENSOR FOR PHOTO ROTATION
2X PLASTIC ROD 10X110 MM
1X SPIRAL SPRING
1X POSITIONING PIN FOR FRICTION BLOCK
1X BUTTERFLY-TYPE SCREW
1X ROD FOR FIXING THE PENDULUM
1X CALIPER, STEEL, 150 MM
1X STAINLESS STEEL RULER, 20 CM
1X ELECTRONIC STOPWATCH
1X BODY OF ARBITRARY SHAPE
1X BRASS BLOCK WITH THROUGH HOLE 20X20X20MM
1X STEEL BLOCK WITH THROUGH HOLE 20X20X20MM
1X ALUMINIUM BLOCK WITH THROUGH HOLE 20X20X60MM
1X SET OF BRASS AND ALUMINIUM STEEL BARS (10X10X10 MM)
1X SET OF BRASS AND ALUMINIUM STEEL BARS (10X10X20 MM)
1X SET OF BRASS AND ALUMINIUM STEEL BARS (10X10X40 MM))

1X SMALL PULLEY
2X SUPPORT ROD
1X LEVER
1X SUPPORT ROD Ø10X100 MM
1X DYNAMOMETER HOLDER
1X 2 M TAPE MEASURE
1X SCISSORS
1X THREAD ON A SPOOL
3X STEEL BALL
2X PLASTIC BALL
4X WEIGHT, 10 G
3X WEIGHT, 50 G
2X HANGER FOR WEIGHTS WITH HOOK 10 G
1X DETACHABLE TRIPOD BASE
1X TRIBOMETER BAR
1X SUPPORT ROD WITH SHAPED HOLE Ø10X313MM
2X ROD WITH INTERNAL THREAD Ø 10X300MM
2X ROD WITH EXTERNAL THREAD Ø 10X313MM
2X ROD WITH EXTERNAL GROOVES Ø 10X313MM 2X TRIPOD COUPLING
1X CYLINDRICAL DYNAMOMETER, 1H
1X CYLINDRICAL DYNAMOMETER, 2,5N 1 X CYLINDRICAL DYNAMOMETER, 5N
1X SET OF WEIGHTS WITH HOOKS (10X WEIGHTS 50G)





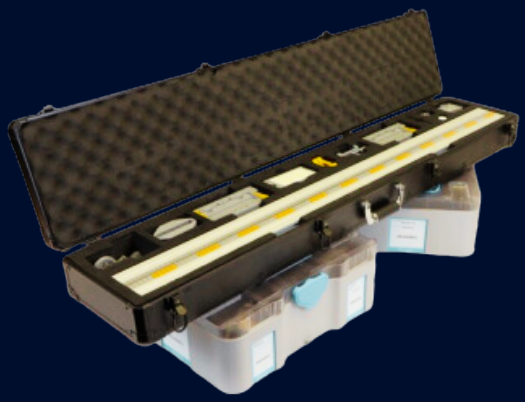




MECHANICS

MECHANICS TRAINING KIT





DYNAMIC SYSTEM

EXPERIMENTS

1. INVESTIGATION OF THE DEPENDENCE OF DISPLACEMENT ON TIME IN THE CASE OF EQUAL-ACCELERATED MOTION
2. INVESTIGATION OF THE DEPENDENCE OF VELOCITY OF AN EQUALLY ACCELERATED MOTION ON TIME
3. EXAMINATION OF THE SIGN OF AN EQUALLY ACCELERATED MOTION
4. MEASUREMENT OF ACCELERATION
5. MEASUREMENT OF AVERAGE SPEED
6. INVESTIGATION OF THE MOTION OF A BODY IN DIFFERENT FRAMES OF REFERENCE
7. INVESTIGATION OF THE DEPENDENCE OF ACCELERATION OF A BODY ON ITS MASS
8. DEPENDENCE OF THE ACCELERATION OF A BODY ON THE MODULUS OF THE FORCE ACTING ON IT
9. INVESTIGATION OF THE DEPENDENCE OF KINETIC ENERGY ON THE VELOCITY OF A BODY
10. INVESTIGATION OF THE DEPENDENCE OF KINETIC ENERGY ON THE MASS OF A BODY
11. DETERMINATION OF MECHANICAL WORK AND POWER
12. STUDY OF THE TRANSITION OF ENERGY FROM ONE FORM TO ANOTHER



COMPONENTS

- 11X MECHANICAL TRACK
- 1X TRACK END SUPPORT TYPE 1
- 1X T-SHAPED SUPPORT
- 1X TRACK END SUPPORT TYPE 2
- 2X STROKE LIMITER
- 2X SPRING
- 2X RACK FOR FIXING OPTICAL SENSORS OF THE PHOTOVOLVE
- 2X THREADED ROD
- 2X EASY-MOVING TROLLEY
- 2X HOOK FOR TROLLEY
- 1X BUMPER SET FOR INELASTIC IMPACT
- 2X BUMPER FOR ELASTIC IMPACT
- 2X MAGNETIC BUMPER FOR ELASTIC IMPACT
- 1X FRICTION PLATE
- 1X ADAPTER-HOLDER
- 1X SET OF LIGHT BARRIERS
- 3X DISC LOAD
- 1X CONTAINER ON A STRING WITH WEIGHTS
- 2X ROD WITH EXTERNAL GROOVES Ø10X313MM

MECHANICS

OPTICS TRAINING KIT

- FOCUSES ON STUDYING LIGHT, INCLUDING REFLECTION, REFRACTION, DISPERSION, AND POLARIZATION.
- CONTAINS EQUIPMENT FOR EXPERIMENTS WITH LENSES, MIRRORS, PRISMS, AND TELESCOPES.
- INCLUDES EXPERIMENTS SUCH AS MEASURING FOCAL LENGTHS OF LENSES, INVESTIGATING THE LAWS OF REFRACTION, AND DEMONSTRATIONS WITH DIFFRACTION GRATINGS.





OPTICS

EXPERIMENTS

1. INVESTIGATION OF THE PROPAGATION OF LIGHT
2. INVESTIGATION OF THE PHENOMENON OF REFLECTION OF LIGHT
3. INVESTIGATION OF THE IMAGE IN A PLANE MIRROR
4. LEARNING THE CONCAVE MIRROR.
5. LEARNING THE FORMULA OF CONCAVE MIRROR.
6. LEARNING OF CONVEX MIRROR.
7. OBSERVATION OF REFRACTION OF LIGHT
8. STUDY OF LAW OF REFRACTION OF LIGHT.
9. DETERMINATION OF THE INDEX OF REFRACTION OF MATTER
10. OBSERVATION OF REFRACTION OF LIGHT IN A PLANE-PARALLEL PLATE
11. OBSERVATION OF THE REFRACTION OF LIGHT IN A PRISM
12. OBSERVATION OF TOTAL REFLECTION OF LIGHT.
13. OBSERVATION OF REVERSIBILITY OF LIGHT FLUXES
14. STUDY OF THE CONSTRUCTION OF A LENS.
15. MEASUREMENT OF THE FOCAL LENGTH OF A COLLECTING LENS
16. STUDY OF THE ACTION OF A COLLECTING LENS.
17. DETERMINATION OF THE FOCAL LENGTH OF A COLLECTING LENS (OPTION 1)
18. DETERMINATION OF FOCAL LENGTH OF COLLECTING LENS (VARIANT 2)
19. VERIFICATION OF BESSEL'S FORMULA.
20. DETERMINATION OF THE FOCAL LENGTH OF A DIFFUSING LENS
21. INVESTIGATION OF MAGNIFICATION OF IMAGES GIVEN BY LENSES
22. VERIFICATION OF THE FORMULA OF A LENS.
23. STUDY OF THE ACTION OF A SYSTEM OF LENSES
24. STUDY OF THE ACTION OF A MAGNIFYING GLASS
25. ASSEMBLING A MODEL OF A DIAGONAL PROJECTOR.
26. ASSEMBLING A MODEL OF A MICROSCOPE
27. ASSEMBLY OF A MODEL OF THE KEPLER TELESCOPE
28. ASSEMBLING A MODEL OF THE GALILEO TELESCOPE
29. OBSERVATION OF LIGHT DISPERSION
30. OBSERVATION OF DIFFRACTION OF LIGHT
31. MEASUREMENT OF THE WAVELENGTH OF LIGHT
32. OBSERVATION OF POLARISATION OF LIGHT
33. INVESTIGATION OF THE POLARISATION OF LIGHT BY REFLECTION



OPTICS

OPTICS TRAINING KIT

COMPONENTS



1X OPTICAL COLLECTING LENS, F=50
2X OPTICAL COLLECTING LENS, F=300
1X OPTICAL LENS COLLECTING, F=100
1X OPTICAL SCATTERING LENS, F=100
1X WHITE SCREEN
6X SLIDING BENCH SUPPORT
1X APERTURE WITH TWO APERTURES
1X APERTURE WITH ONE AND TWO SLITS
1X APERTURE WITH SQUARE APERTURE AND LETTER L COMPOSED OF CONSECUTIVE 9 APERTURES
1X RED LIGHT FILTER
1X LIGHT FILTER GREEN
1X LIGHT FILTER BLUE
2X POLAROID SLIDE
1X SLIDE LIGHT BARRIER WITH A PICTURE
1X SLIDE BLACK STRIP AND SINGLE SLIT
1X SLIDE 4 DOUBLE SLITS
1X DIFFRACTION GRATING
1X DIFFRACTION GRATING
1X DIFFRACTION GRATING
2X LIGHT BARRIER
1X SHEET GLASS
1X ADJUSTABLE SLIT

1X SEMICYLINDRICAL PLATE
1X TRAPEZOIDAL PLATE
1X ILLUMINATOR WITH POWER SUPPLY
3X OPAQUE LIGHT BARRIER
1X SUPPORT ROD FOR MOUNTING THE ILLUMINATOR WITH EXTERNAL THREAD
2X MEASURING RULER, COLLAPSIBLE
2X ROD WITH MALE THREAD
2X ROD WITH INTERNAL THREAD
1X BASE FOR OPTICAL BENCH/TRIPOD
1X DOUBLE-SIDED MIRROR PLATE
1X BRACKET FOR FIXING THE DOUBLE-SIDED MIRROR PLATE
2X APERTURE AND SLIDE HOLDER
1X PLATFORM/TABLE FOR INSTALLATION ON THE RAYTOR
1X 180° PROTRACTOR
1X ANGLE 60°
1X ANGLE 45°
1X DOUBLE-SIDED TAPE
1X 5 BEAM LASER TRANSMITTER
1X MAGNIFIER
1X HOLDER OF OVERSIZED SLIDES WITH THE POSSIBILITY OF INSTALLATION ON THE RAYTER
1X OPTICAL DISC



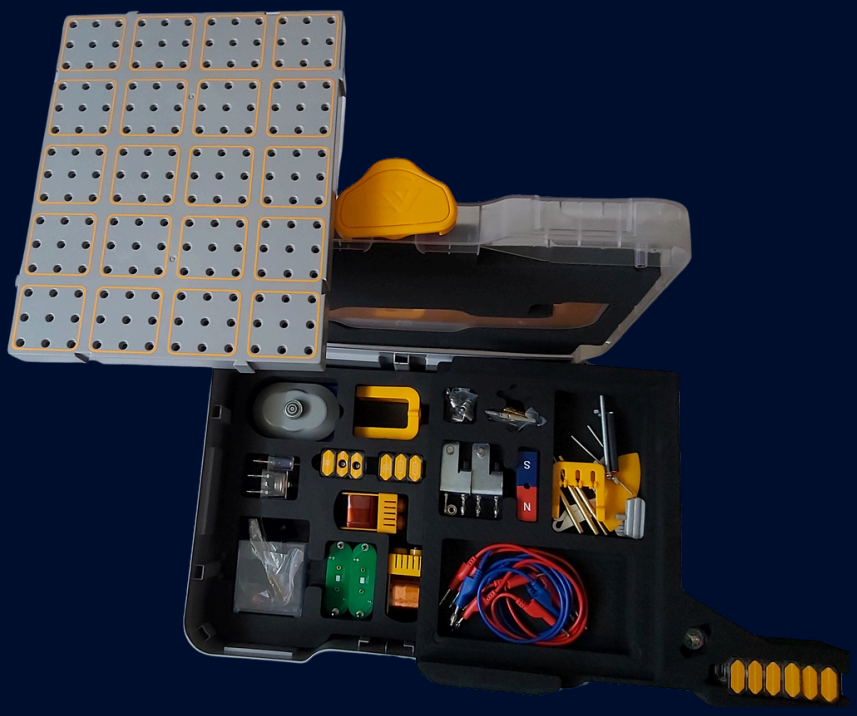


OPTICS

ELECTRIC TRAINING KIT

- EXPERIMENTS COVER MEASURING ELECTRIC CURRENT, VOLTAGE, AND RESISTANCE, AS WELL AS STUDYING GALVANIC CELLS, ELECTRIC MOTORS, AND GENERATORS.
- INCLUDES TOOLS FOR EXPLORING ELECTROMAGNETIC INDUCTION, CAPACITOR BEHAVIOR, AND MAGNETIC FIELDS OF COILS AND MAGNETS.
- ENABLES USERS TO INVESTIGATE ENERGY TRANSFER, ELECTRICAL PROPERTIES OF MATERIALS, AND THE FUNCTIONS OF ELECTRICAL DEVICES.





ELECTRICITY

EXPERIMENTS

1. MEASURING CURRENT WITH AN AMMETER
2. VOLTAGE MEASUREMENT WITH A VOLTMETER
3. MEASURING ELECTRICAL RESISTANCE WITH AN OHMMETER
4. STUDYING A RHEOSTAT
5. STUDY OF THE DEPENDENCE OF THE CURRENT IN A CONDUCTOR ON THE APPLIED VOLTAGE
6. STUDY OF THE DEPENDENCE OF THE CURRENT IN A CONDUCTOR ON ITS RESISTANCE
7. STUDY OF SERIES CONNECTION OF CONDUCTORS.
8. STUDY OF PARALLEL CONNECTION OF CONDUCTORS.
9. STUDY OF MIXED CONNECTION OF CONDUCTORS
10. MEASUREMENT OF RESISTANCE USING AMMETER AND VOLTMETER.
11. STUDY OF VOLTAGE DIVIDER
12. STUDY OF GALVANIC CELL
13. STUDY OF GALVANIC CELL BATTERY
14. DETERMINATION OF EMF AND INTERNAL RESISTANCE OF A CURRENT SOURCE. (1ST VARIANT)
15. MEASUREMENT OF EMF AND INTERNAL RESISTANCE OF A CURRENT SOURCE. (2ND VARIANT)
16. MEASUREMENT OF EMF AND INTERNAL RESISTANCE OF A CURRENT SOURCE. (3RD VARIANT)
17. DETERMINATION OF CHARACTERISTICS OF A CURRENT SOURCE
18. STUDY OF THE WORK OF A CURRENT SOURCE
19. DETERMINATION OF POWER AND WORK OF ELECTRIC CURRENT
20. MEASUREMENT OF THE POWER OF AN INCANDESCENT LAMP
21. DETERMINING THE TEMPERATURE OF THE FILAMENT OF A LAMP
22. OBSERVING THE ELECTRICAL PROPERTIES OF LIQUIDS
23. DETERMINATION OF ELEMENTARY ELECTRIC CHARGE
24. INVESTIGATION OF THE FIELD OF A PERMANENT MAGNET
25. STUDY OF MAGNETIC INTERACTION OF BODIES.
26. STUDY OF THE MAGNETIC FIELD OF A WIRE COIL
27. STUDY OF THE ACTION OF A MAGNET ON A CONDUCTOR WITH CURRENT
28. INVESTIGATION OF THE PHENOMENON OF MAGNETISATION
29. STUDY OF THE ELECTROMAGNET
30. STUDY OF THE OPERATION OF AN ELECTRIC MOTOR
31. DETERMINATION OF EFFICIENCY OF AN ELECTRIC MOTOR
32. STUDY OF THE PHENOMENON OF ELECTROMAGNETIC INDUCTION
33. STUDY OF THE RULE OF LENTZ
34. STUDY OF DIRECT CURRENT GENERATOR.
35. STUDY OF ALTERNATING CURRENT GENERATOR
36. STUDY OF CAPACITOR
37. STUDY OF SEMICONDUCTOR DIODE

ELECTRICITY

ELECTRIC TRAINING KIT



COMPONENTS

1X MILLIAMMETER (FROM -6 TO 6MA, 0.2MA; FROM -60 TO 60MA, 2MA)
1X AMMETER (FROM -0.2 TO 0.6A, 0.02A; FROM -1 TO 3A, 0.1A)
1X VOLTMETER (FROM -1 TO 3V, 0.1V; FROM -5 TO 15V, 0.5V)
1X MOUNTING PANEL
6X DIRECT CONNECTOR MODULE
2X MODULE LAMP HOLDER FOR E10 LAMP
1X MODULE CAPACITOR, 2200MF
1X MODULE DIODE, ZF4.7
1X MODULE RESISTOR, 4.7 OHM
1X RESISTOR MODULE, 8.2 OHM
1X POTENTIOMETER MODULE, 10 OHM
1X MODULE SWITCH
2X MODULE BATTERY HOLDER
3X CONNECTING WIRE RED
3X CONNECTING WIRE BLUE
11X MOTOR-GENERATOR MODULE
1X TRANSFORMER CORE STRAIGHT
1X STRIP MAGNET
1X CYLINDRICAL MAGNET
5X LAMP
1X WEIGHT WITH HOOK
1X COMPASS
2X DOUBLE BANANA PLUG
2X ALLIGATOR PLUG
1X COPPER COIL 400 TURNS
1X COPPER COIL OF 1600 TURNS
2X UNIVERSAL HOLDER MODULE
1X U-SHAPED MAGNET IN PLASTIC CASE
1X BASE FOR MAGNET INSTALLATION
1X SET OF ACCESSORIES FOR EXPERIMENTS WITH ELECTROLYSIS



ELECTRICITY

THERMODYNAMICS TRAINING KIT

- STUDIES THERMAL PHENOMENA, INCLUDING HEAT TRANSFER, PHASE TRANSITIONS, AND THE THERMAL EXPANSION OF MATERIALS AND GASES.
- EXPERIMENTS INCLUDE MEASURING SPECIFIC HEAT CAPACITY, PHASE CHANGES, AND ATMOSPHERIC PRESSURE, AS WELL AS DEMONSTRATIONS OF ISOTHERMAL, ISOBARIC, AND ISOCHORIC PROCESSES.
- EQUIPMENT INCLUDES THERMOMETERS, HEATERS, THERMODYNAMIC DEVICES FOR HEAT CONDUCTION, AND OTHER TOOLS.



THERMODYNAMICS

EXPERIMENTS

1. RESEARCH ON WATER COOLING
2. GRADUATION OF THERMOMETER
3. STUDY OF DEPENDENCE OF PRESSURE IN LIQUID ON DEPTH
4. STUDY OF HEATER OPERATION
5. STUDY OF THE PHENOMENON OF HEAT TRANSFER
6. STUDY OF HEAT BALANCE EQUATION
7. DETERMINATION OF EFFICIENCY OF ELECTRIC HEATER
8. MEASUREMENT OF SPECIFIC HEAT CAPACITY OF A SOLID BODY
9. MEASUREMENT OF THE SPECIFIC HEAT OF FUSION OF ICE
10. INVESTIGATION OF THE BOILING PROCESS
11. MEASUREMENT OF THE SPECIFIC HEAT OF VAPOUR FORMATION
12. STUDY OF CHANGES IN THE AGGREGATE STATES OF WATER.
13. OBSERVATION OF CRYSTALLISATION OF SUPERCOOLED LIQUID
14. INVESTIGATION OF THE MELTING OF A SALT SOLUTION
15. OBSERVATION OF THERMAL EXPANSION OF SOLIDS
16. STUDY OF THERMAL EXPANSION OF LIQUIDS
17. STUDY OF THERMOMETRIC FLUID
18. THERMAL EXPANSION OF WATER
19. STUDY OF THE TEMPERATURE DEPENDENCE OF THE VOLUME OF A GAS
20. DETERMINATION OF RELATIVE HUMIDITY OF AIR BY DEW POINT.
21. MEASUREMENT OF RELATIVE HUMIDITY OF AIR
22. MEASUREMENT OF SURFACE TENSION OF LIQUIDS
23. STUDY OF HEAT TRANSFER
24. STUDY OF THE PHENOMENON OF HEAT CONDUCTION
25. STUDY OF HEAT TRANSFER BY RADIATION
26. STUDY OF GAS THERMOMETER
27. STUDY OF ISOTHERMAL PROCESS
28. STUDY OF ISOBARIC PROCESS
29. STUDY OF ISOCHORIC PROCESS
30. MEASUREMENT OF ATMOSPHERIC PRESSURE (OPTION 1)
31. MEASUREMENT OF ATMOSPHERIC PRESSURE (OPTION 2)





THERMODYNAMICS

THERMODYNAMICS TRAINING KIT

COMPONENTS



1X LABORATORY ASBESTOS MESH (12,5X12,5 CM)
1X TRIPOD RING
1X TRIPOD BASE
1X BURNER
2X TRIPOD SUPPORT ROD6 Ø10X250MM
2X ROD WITH INTERNAL THREAD, Ø10X300MM
2X ROD WITH EXTERNAL THREAD, Ø10X313MM
2X TRIPOD FOOT
2X LABORATORY BEAKER, 250 ML CONICAL FLASK, 100 ML
1X MEASURING CYLINDER, 100 ML
1X COLOURIMETER WITH A SPIRAL
1X DEVICE FOR DEMONSTRATION OF THERMAL EXPANSION OF METALS
1X DEVICE FOR DEMONSTRATION OF THERMAL CONDUCTIVITY OF ME TALS
1X CANDLE
1X PLASTIC CUVETTE (270X200X100 MM)
1X ALUMINIUM BLOCK 20X20X60MM
1X BRASS BLOCK 20X20X20MM,
1X STEEL BLOCK 20X20X20MM
1X THREAD ON A SPOOL
1X ELECTRONIC STOPWATCH
2X LABORATORY THERMOMETER GRADUATED -10-110 ˚C
1X LABORATORY THERMOMETER NOT GRADUATED
1X STAINLESS STEEL SPATULA-SPOON
7X SILICONE STOPPER - 7 PCS.

1X MARKER PEN
2X TEST TUBE
4X LONG GLASS TUBE
2X SHORT GLASS TUBE
1X SCISSORS
1X RED INK BOTTLE
2X UNIVERSAL HOLDER
4X TRIPOD SLEEVE
5X SILICONE RING Ø60 MM
1X TRANSPARENT SILICONE TUBE
1X DRAWING PAPER
1X DRIP TAP
1X 60 ML SYRINGE
1X 20 ML SYRINGE
1X SMALL 5-IN-1 HAMMER
1X FUR FLAP
1X 2M TAPE MEASURE
1X ELECTRONIC SCALE 200 G
2X CONNECTING WIRE BLUE 50 CM
1X CONNECTING WIRE BLUE 30 CM
2X CONNECTING WIRE RED 50 CM
1X CONNECTING WIRE RED 30 CM
1X AMMETER (FROM -0.2 TO 0.6A, 0.02A; FROM -1 TO 3A, 0.1A) 1 X VOLTMETER (FROM -1 TO 3V, 0.1V; FROM -5 TO 15V, 0.5V)









THERMODYNAMICS