

APPROVED

Order No. V1-194 of the Director of
Lietuvos Inžinerijos Kolegija HEI
of November 28, 2024

HEALTH AND SAFETY INSTRUCTION NO. 9 FOR STUDENTS WORKING IN THE AUTOMOTIVE DIAGNOSTICS AND REPAIR LABORATORY

I. GENERAL PROVISIONS

Work with electrical equipment, measuring instruments, and other repair tools is permitted only for persons aged 18 or older, who have undergone a medical examination in accordance with established procedures, possess theoretical knowledge in electrical engineering, have completed workplace safety and health instruction, and perform tasks under the supervision of a teacher.

1. A student is required to:
 - 1.1. report to the supervising teacher any violations of occupational health and safety requirements that they cannot or are not obliged to eliminate themselves;
 - 1.2. take measures, within the scope of their knowledge and abilities, to prevent injuries and emergency situations that may endanger their own or others' safety and health;
 - 1.3. refuse to carry out work if, in their judgment, it poses a risk to health or life;
 - 1.4. immediately report to the supervising teacher, the head of the laboratory, or an occupational health and safety specialist about any injuries sustained during work or other work-related health problems;
 - 1.5. operate work equipment in strict accordance with the requirements specified in the equipment documentation, manuals, and this instruction;
 - 1.6. disconnect the power supply and promptly notify the teacher if any equipment malfunctions are observed during work;
 - 1.7. know the location of fire extinguishing equipment in the workplace, be able to operate it, and avoid actions that could cause a fire;
 - 1.8. comply with personal hygiene requirements, ensure that work clothing and footwear are clean, and wash hands only using designated cleaning agents.
 - 1.9. A student who fails to comply with these instructions may be removed from work and subjected to disciplinary action. Accidents occurring during the educational process are investigated in accordance with the procedure established by the Ministry of Education, Science and Sport of the Republic of Lithuania.

II. OCCUPATIONAL RISK FACTORS AND CORRESPONDING SAFETY MEASURES

2. The following hazards may be present in the student's workplace:
 - 2.1. defective tools or other mechanical work equipment;
 - 2.2. exposure to electrical current, including contact with uninsulated live parts, exposed electrical wires, voltage on equipment housings, accumulation of static electricity, or presence in areas with electrical leakage;
 - 2.3. operation of machinery or mechanisms with moving parts that are not protected by safety covers;
 - 2.4. inadequate workplace lighting;
 - 2.5. slipping, tripping, or falling hazards;
 - 2.6. sharp objects;
 - 2.7. physical strain;

- 2.8. psycho-emotional stress;
- 2.9. noise;
- 2.10. dust;
- 2.11. work areas and tools not conforming to regulatory requirements.
- 2.12. To protect students from electrical hazards such as electric current, static electricity, electromagnetic fields, electric arcs, and similar risks, the following protective measures are applied:
 - 2.12.1. enclosures, protective covers, and casings of electrical equipment;
 - 2.12.2. supplementary, double, or reinforced insulation of live parts of electrical equipment;
 - 2.12.3. neutral grounding of conductive enclosures of electrical equipment;
 - 2.12.4. use of reduced (low) voltage;
 - 2.12.5. signal colors and electrical safety warning signs and posters;
 - 2.12.6. audible and visual signaling devices;
 - 2.12.7. residual current protective devices (RCDs);
 - 2.12.8. personal protective equipment (insulating gloves, overshoes, mats, tools with insulated handles, etc.).
- 2.13. The overall noise level at the student's workplace must not exceed 80 dBA, and the air contamination levels must comply with the limits established in hygiene standards. A respirator must be used when there is exposure to dust.
- 2.14. The selection and duration of use of personal protective equipment must comply with the requirements established in the Regulations on the Provision of Employees with Personal Protective Equipment.

III. STUDENT ACTIONS BEFORE STARTING WORK

- 3. Before commencing work, students must:
 - 3.1. wear appropriate work clothing;
 - 3.2. familiarize themselves with the practical work task;
 - 3.3. receive instructions from the supervising teacher indicating at which workstation or in which location the work will be performed;
 - 3.4. familiarize themselves with the power supply system and the distribution panel at the workplace. The student must know which switching devices disconnect the power supply at the workplace and in the entire laboratory;
 - 3.5. receive instructions from the supervisor regarding which machines, mechanisms, equipment, apparatus, and instruments are to be used. The student must carry out an external inspection of this equipment and ensure that it is suitable for operation;
 - 3.6. visually check that all connecting wires, plugs, sockets, etc., are in good condition;
 - 3.7. ensure that the workplace is in order, unobstructed, adequately illuminated, and not slippery.

IV. STUDENT ACTIONS DURING WORK

- 4.1. During work, the student must behave in a disciplined manner:
- 4.2. before switching on an electrical device, personally ensure that the circuit breaker or switch is in the *off* position and that there is no voltage on the relevant terminals;
- 4.3. ensure that the excitation circuits of the devices are properly connected;
- 4.4. not leave the secondary circuits of current transformers open;
- 4.5. ensure that connecting wires are undamaged and securely connected to the terminals. The wires must be arranged so that they cannot be accidentally disconnected, do not obstruct the arrangement of devices, prevent unintended contact between conductors, and allow the supervising teacher to quickly and easily inspect the connection diagram;
- 4.6. ensure that the assembled device is checked by the supervisor.
- 4.7. The student is prohibited from:

- 4.7.1. switching on voltage before the connection diagram has been inspected;
- 4.7.2. touching terminals or other elements that are live or may become live;
- 4.7.3. exceeding the permissible load of electrical devices;
- 4.7.4. leaning on operating electrical devices or equipment, moving them, etc.;
- 4.7.5. changing wires or devices in a circuit when voltage is present;
- 4.7.6. touching laboratory devices or instruments not related to the assigned work, turning their knobs or terminals.
- 4.8. It is prohibited to work with electrical equipment whose protective panels, covers, or safety interlocks have been removed or disabled.
- 4.9. It is prohibited to leave an operating electrical device connected to the power supply without supervision.

V. STUDENT ACTIONS IN EMERGENCY SITUATIONS

- 5.1. In the event of a power outage, jamming of rotating parts, or during work breaks, electrical devices must be disconnected from the power supply.
- 5.2. Work with electrical equipment must be stopped immediately if:
 - 5.2.1. a plug, socket, or cable insulation is damaged;
 - 5.2.2. a switch malfunctions;
 - 5.2.3. any sensation of electric current is felt, even a weak one;
 - 5.2.4. oil begins to leak from the gear mechanism or ventilation ducts;
 - 5.2.5. smoke appears or a smell characteristic of burning insulation is detected;
 - 5.2.6. abnormal noise, rattling, or increased vibration occurs;
 - 5.2.7. housing parts, handles, or protective covers break or crack.
- 5.3. In all cases where electrical equipment or wiring is damaged (due to overload, short circuit, voltage on the casing, insulation catching fire, or the appearance of a characteristic smoke odor), the power supply must be immediately disconnected, work stopped, and the supervisor notified.
- 5.4. In the event of an accident, first aid must be provided to the injured person. If necessary, a doctor must be called. The scene of the accident should be preserved unchanged unless doing so endangers the health or safety of others. The incident must be reported to the department head.
- 5.5. In the event of a fire, the fire department must be called immediately, and the extinguishing started using the available firefighting equipment.
- 5.6. Electrical equipment must be disconnected from the power source before extinguishing.
- 5.7. It must be remembered that when extinguishing fires involving live electrical equipment, foam or water extinguishers must not be used. Only halon, dry powder, or carbon dioxide extinguishers, or sand, are permitted. The distance between the extinguisher nozzle and live electrical equipment must be at least one meter.
- 5.8. If a student is exposed to electric current, assistance must be provided by nearby students. If a student sees another person being electrocuted, they must immediately disconnect the victim from the current using non-conductive materials.
 - 5.8.1. The victim can be released from live parts by switching off the power, using a dry stick or another dry, non-conductive object, or by pulling the victim by their clothing (if dry). However, it must be remembered that in all such cases, the rescuer's life is at risk of becoming part of the electrical circuit; therefore, caution and appropriate safety measures are essential.
- 5.9. If within an area of leakage current (step voltage zone), the person must move away by taking small, sliding steps without lifting their feet from the ground, or by hopping on one foot, until reaching a safe zone.

VI. STUDENT ACTIONS AFTER COMPLETING WORK

- 6.1. After completing work, the student must:
 - 6.1.1. disconnect electrical equipment from the power supply and dismantle the test circuit;
 - 6.1.2. inspect personal protective equipment and place it in its designated storage location;
 - 6.1.3. return small measuring instruments, other devices, and connecting cables to their proper storage places;
 - 6.1.4. organize the workplace;
 - 6.1.5. wash hands with warm water and soap, if necessary;
 - 6.1.6. report any difficulties or irregularities encountered during work to the supervising teacher.
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