

APPROVED

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

HEALTH AND SAFETY INSTRUCTION NO. 12 FOR STUDENTS WORKING IN THE CONSTRUCTION MATERIALS LABORATORY

I. GENERAL PROVISIONS

- 1.1. Work with electrical equipment, material heating devices and material testing equipment is permitted only for persons aged 18 or older who possess theoretical knowledge of electrical and mechanical engineering, have completed workplace health and safety instruction, and perform tasks under the supervision of a teacher.
- 1.2. A student must:
 - 1.2.1. take measures, within the scope of their knowledge and abilities, to prevent injuries, skin burns and emergency situations that may endanger their own or others' health and safety;
 - 1.2.2. attend the safety briefing and confirm participation by signing the logbook;
 - 1.2.3. refuse to carry out work if, in their judgment, it poses a risk to health or life, and immediately inform the supervising teacher or the occupational health and safety specialist;
 - 1.2.4. immediately report to the supervising teacher, the head of the laboratory or an occupational health and safety specialist of any injuries sustained during work or other work-related health problems;
 - 1.2.5. operate work equipment strictly in accordance with the requirements specified in the equipment documentation and manuals.
 - 1.2.6. disconnect the power supply and immediately inform the supervising teacher upon noticing any faults or malfunctions in the equipment or instruments;
 - 1.2.7. know the location of fire extinguishing equipment in the workplace, be able to operate it and avoid actions that could cause a fire;
 - 1.2.8. comply with personal hygiene requirements and wash hands only with designated cleaning agents.
- 1.3. 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 work environment:
 - 2.1. exposure to electrical current, including contact with uninsulated live parts, exposed electrical wires, voltage on equipment housings, accumulation of static electricity or entering a leakage current (step voltage) zone;
 - 2.2. operating equipment or mechanisms (without protective covers or with moving parts), faulty tools, tools with uninsulated handles or other hand tools that do not meet safety requirements;
 - 2.3. inadequate workplace lighting;
 - 2.4. slipping or tripping hazards leading to falls;
 - 2.5. sharp objects;
 - 2.6. physical strain;
 - 2.7. chemical air contamination;

- 2.8. risk of skin burns;
- 2.9. dust;
- 2.10. work areas that do not comply with regulatory requirements, and defective work equipment.
- 2.11. To ensure protection against thermal and chemical burns, electric current, static electricity, electromagnetic fields and electric arcs, the following safety measures must be applied:
 - 2.11.1. protective enclosures, guards and shields for electrical, thermal and mechanical equipment;
 - 2.11.2. additional reinforced insulation of live parts in electrical equipment;
 - 2.11.3. connection of conductive casings of electrical equipment to the neutral conductor;
 - 2.11.4. use of reduced voltage;
 - 2.11.5. signal colors and warning signs protecting against electrical and thermal burns;
 - 2.11.6. audible and visual alarms;
 - 2.11.7. personal protective equipment (aprons, gloves, rubber mats, tools with insulated handles, etc.).
- 2.12. When working with volatile chemical substances, ventilation must be switched on.
- 2.13. The overall noise level in students' workplaces must not exceed 80 dBA, and air contamination from chemical substances and dust must not exceed the limits specified in hygiene standards.

III. STUDENT ACTIONS BEFORE STARTING WORK

- 3.1. Before starting work, students must put on appropriate work clothing.
- 3.2. The practical work assignment must be reviewed.
- 3.3. Instructions must be obtained from the supervising teacher as to which workstation, equipment or area the work will be carried out at.
- 3.4. The student must know which switching devices disconnect the power supply at the workplace and in the entire laboratory.
- 3.5. Instructions must be obtained from the supervising teacher as to which machines, mechanisms, equipment, apparatus and instruments are to be used.
- 3.6. An external inspection of this equipment must be carried out to ensure its suitability for work.
- 3.7. It must be visually ensured that connecting wires, plugs and sockets are in good condition.
- 3.8. It must be ensured that the workplace is tidy, unobstructed and adequately illuminated.

IV. STUDENT ACTIONS DURING WORK

- 4.1. During work, the student must:
 - 4.1.1. not leave heating or other operating devices unattended;
 - 4.1.2. before switching on heating devices, ensure that their use is safe and reliable;
 - 4.1.3. handle electrical devices and equipment properly and avoid damaging them.
- 4.2. Furnace containers and other items intended for heating must be handled using special tongs or other protective equipment.
- 4.3. Connecting wires must be undamaged and securely attached to terminals. They must be positioned in such a way that they cannot be accidentally pulled loose and do not interfere with work.
- 4.4. Before starting the task, the laboratory work description must be reviewed.
- 4.5. Students are strictly prohibited from:
 - 4.5.1. switching on the power supply before the equipment is prepared for operation;
 - 4.5.2. touching terminals or other parts of devices that are hot or may be under voltage;
 - 4.5.3. operating electrical devices beyond the permitted load limits;
 - 4.5.4. leaning on or moving operating devices or apparatus;
 - 4.5.5. touching or adjusting instruments and devices in the laboratory that are not related to the ongoing laboratory work, including turning their knobs or terminals;

- 4.5.6. working with electrical equipment from which protective covers, lids or interlocks have been removed or disabled.

V. STUDENT ACTIONS DURING EMERGENCY SITUATIONS

- 5.1. In the event of a power outage, equipment malfunction or during work breaks, electrical devices must be disconnected from the power supply.
- 5.2. Work with electrical or other equipment must be stopped immediately if:
 - 5.2.1. a plug or socket is broken, or the cable insulation is damaged;
 - 5.2.2. a switch malfunctions;
 - 5.2.3. any sensation of electric current, even slight, is felt;
 - 5.2.4. oil begins to leak from a gear mechanism or ventilation ducts;
 - 5.2.5. smoke appears or a smell resembling burning insulation is detected;
 - 5.2.6. unusual noise, knocking or increased vibration occurs;
 - 5.2.7. any housing part, handle or protective cover breaks or cracks.
- 5.3. In all cases where electrical equipment or wiring is damaged (for example, in the event of overload, short circuit, voltage appearing on the casing, insulation ignition or the appearance of a specific burning smell), the power supply must be immediately disconnected, work must be stopped and the supervising teacher must be informed.
- 5.4. In the event of an accident, first aid must be provided to the injured person, and, if necessary, a doctor must be called. The accident site must be preserved unchanged, provided this does not endanger the health or life of others, and the incident must be reported to the department head.
- 5.5. In case of fire, the fire brigade must be called immediately, and an attempt must be made to extinguish the source of the fire using the available firefighting equipment.
- 5.6. Electrical equipment must be extinguished only after disconnecting it from the power supply.
- 5.7. Devices that are live (under voltage) must never be extinguished with foam or water extinguishers.
- 5.8. If a student receives an electric shock, nearby students must render assistance. If a student witnesses another person being electrocuted, the injured person must be immediately freed from live parts:
 - 5.8.1. The victim may be freed by disconnecting the power supply, using a dry stick or another non-conductive object, or by pulling the victim away by their clothing (if the clothing is dry). It must be remembered that in all such cases, the rescuer's life is at risk of becoming part of the electrical circuit; therefore, extreme caution must be exercised and appropriate safety measures taken.
 - 5.8.2. If entering a leakage current (step voltage) zone, one must move away to a safe area by taking small, sliding steps without lifting the feet off the ground, or by hopping on one leg.

VI. STUDENT ACTIONS AFTER COMPLETING WORK

- 6.1. Upon completion of work, the student must:
 - 6.1.1. disconnect electrical equipment from the power supply and tidy the workplace;
 - 6.1.2. check personal protective equipment and return it to its designated storage place;
 - 6.1.3. return measuring instruments, other devices and connecting cables to their designated storage area;
 - 6.1.4. wash hands with warm water and soap if necessary;
 - 6.1.5. report any difficulties or irregularities encountered during work to the supervising teacher.
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