Course Unit Descriptor

Study Programme: Agricultural engineering and information technologies

Course Unit Title: Ergonomics and microclimate of tractor cabins

Course Unit Code: 19.PTI047

Name of Lecturer(s): Mirko Simikić

Type and Level of Studies: Undergraduate

Course Status (compulsory/elective): Elective

Semester (winter/summer): winter

Language of instruction: Serbian

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 6

Prerequisites: None

Course Aims:

The course aims to provide students with more information about ergonomic and microclimatic characteristics of modern tractor cabins, which are of great importance for the comfort and health of the operator. Also, students should expand their knowledge about the individual systems in a cabin, designs, functioning, basic adjustments, maintenance, and storage.

Learning Outcomes:

After taking the course, the student acquires knowledge and skills that enable him to: understand the technical basis of the system within tractor cabins that are responsible for ergonomic and microclimatic characteristics, design, testing, proper selection, operating, and adjustment of basic parameters important for ergonomics and microclimate.

Syllabus:

*Theory*

Ergonomic characteristics affecting the workload of the operators, easy access to the operator's seat, comfortable driving. Noise and vibration. Seat, mechanical oscillations, and tractor cab suspension. Background on microclimate systems in motor vehicles, system division. Cooling and heat loads of tractor cabs, characteristics of the materials that tractor cabins are made of, safety glass, selection and marking method, tests. Characteristics of air conditioners in tractor cabins, proper use, and maintenance. Thermal interaction of the driver and cabin - heat exchange. The subjective sensation of heat and its assessment.

*Practice*

Standards in the field of testing microclimatic conditions in the tractor cabin.

Introduction to ergonomic characteristics of tractor cabins, their testing in laboratory conditions - equipment, standards, testing methods, and report writing. Introduction to the operation and design of microclimatic systems in tractor cabins. Calculation of basic parameters of noise, vibration, and thermal interaction of the operator and cabin. Testing of noise, vibration, and microclimatic characteristics of tractor cabins - equipment, methods, standards, testing techniques and report writing.

Required Reading:


1. Nikolić R, Savin L, Simikić M: Tractors - testing, Faculty of agriculture Novi Sad, 2007
2. Savin L, Simikić M, Nikolić R, Ivanišević M: Agricultural tractors, Faculty of agriculture Novi Sad, 2016.
3. Nikolić et al. Mechanical and thermal injuries in agriculture, Faculty of agriculture Novi Sad, 2009
4. Nikolić et al. Development and use of single axle tractors and motor implements, Faculty of agriculture Novi Sad, 2011
5. Ružić D.: Microclimate in motor vehicles, Edition: Technical Sciences - Monograph FTN, 2016.


| Weekly Contact Hours: 4 | Lectures: 2 | Practical work: 2 |
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Teaching Methods:

The method of oral presentations and discussions. The method of drawing, presentations, demonstrations, simulations and illustrations on the board and by using video presentations. Consultations and seminar papers. The method of practical work in laboratories and at the Institute

| Knowledge Assessment (maximum of 100 points): | | | |
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| Pre-exam obligations | points | Final exam | points |
| Active class participation | 10 | written exam | 20 |
| Practical work | | oral exam | 45 |
| Preliminary exam(s) | 15 | ……. | |
| Seminar(s) | 10 | | |
| The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc. | | | |