# SYLLABUS

**1. Course title:**

Flexible transportation

**2. Code:**

(max. 20 characters)

**3. Cycle of study:**

1

**4. ECTS credits:**

3

**5. Type of course:**

○ Mandatory ◉ Elective

**6. Prerequisites:**

(max. 110 characters)

**7. Class restrictions:**

None

**8. Duration / semester:**

1 6

**9. Weekly contact hours:**

9.1. Lectures: 2

9.2. Seminars: 0

9.3. Laboratory/Practice classes: 1

**10. Faculty:**

Faculty of Mechanical Engineering Tuzla

**11. Department/study program:**

Manufacturing Mechanical Engineering

**12. Lecturer:**

Ph.D. Alan Topčić, Associate Professor

**13. Lecturer's e-mail:**

alan.topcic@untz.ba

**14. Web site:**

www.mf.untz.ba

**15. Course aims:**

Understanding the nature, functions and role of the internal transportation/material handling systems within the production system; Mastering the necessary theoretical and practical skills in the field of subject studies in order to increase the competitive advantage of the production system through the improvement of the efficiency of the internal transportation/material handling processes, through its automation and integration with other segments of the production system.

**16. Learning outcomes:**

Identification and classification of transport equipment and devices within the production system; Defining, describing and designing material flows within the production system; Calculation of construction and technical-technological parameters of transport equipment and devices; Establish disciplines and strategies of mass-serving for the specific situation in the internal transportation system; Applying of the basics of modeling and simulation of the internal transportation system on a concrete cases

**17. Course content:**

Basic principles of internal transportation/material handling in the production systems; Flows of materials; Continuous and cyclical transportation equipment and devices; The concept of flexible transportation; Flexible transportion management systems; The term flow of transport events; Deterministic and stochastic processes in transportation; Strategies and disciplines of serving; Mass-serving systems; Basic modeling and simulation of flexible transportation systems

**18. Learning methods:**

LECTURES - theoretical lectures with the aim of acquiring theoretical skills supported by usage of multimedia tools and applying of active two-way communication on relation student - professor; LABORATORY EXERCISES - work in the laboratory and in the field with the aim of acquiring practical skills related to the subject matter of attached items; Preparation and presentation of Seminar paper and Reports on laboratory exercises - activities based on solving specific project issues from subjects of studie

**19. Assessment methods:**

PRE-EXAM REQUIREMENT: Students write two tests from Lecture - theoretical part (after half semester - first test and at the end of the semester - second test) and two tests from the laboraotial exercises (after half semester - first test and at the end of the semester - second test). Tests include previously treated topics within lectures and auditorial exercises. Theories tests are consist from of multiple choice tasks, tasks of simple recollection or essay tasks, where each correct answer is scored with 1 point, ie., the student can collect up to 8 points per test - 16 points for two tests. Tests from laboratorial exercises are consist from calculation tasks, where each correct solution is scored with 1 point, ie., the student can collect up to 5 points per test - 10 points for two tests. All the tests are taken by all students in the course at the same time thereby achieving uniformity of the level of knowledge that is being tested, as well as the conditions under the which a students takes the exam.
As part of the pre-exam requirement, students are required to prepare an individual Seminar paper that will cover a specific topic from the content of the subject. The same must be submitted in writing to the subject teacher for review, evaluation and presentation. For the Seminar paper the student can collect a maximum of 4 points. Students prepare, submit and presents a Report from laboratory exercises for which they can collect a maximum of 10 points. For a continuous activity on lectures and exercises throughout the semester, the student can collect 22,5points in lectures, and 7,5 points at laboratory exercises.
The exam is oral. The right to access to the exam have a students who have fulfilled all the pre-exam requirement with more than 50% success, and were present in more than 70% of lectures and exercises. At the oral examination the student answers on five questions from the program of the subject treated in lectures and exercises. An oral exam can be passed if the student answers to all questions. The maximum number of points that student can achieve at the oral exam is 30 points. Checks on all forms of knowledge are recognized as a cumulative exam. In order to pass the course student must achieve a minimum of 54 cumulative points.

**20. Assessment components:**

The requirement for a signature in Index - presence in 70% of the lectures. The rating is based on the total number of points which student earned by completing pre-exam requirements and on exam. The maximum number of points are 100. Points are collected by fulfilling the obligations according to the following scale: attendance to the lecture (22,5 points), tests from theory (2 tests × 8 points), Seminar paper (4 points), attendance to the Auditorial Exercise (7,5 points), Calculation tasks tests (2 tests ×5 points), Laboratory Exercise Report (10 points), Exam (30 points)
GRADING SYSTEM:
from 0 to 53 points - grade: 5 (five)
from 54 to 63 points - grade: 6 (six)
from 64 to 73 points - grade: 7 (seven)
from 74 to 83 points - grade: 8 (eight)
from 84 to 93 points - grade: 9 (nine)
from 94 to 100 points - grade: 10 (ten)

**21. Required reading list:**

Šelo R. i sar. (2002) „ Fleksibilni transport“, Mašinski fakultet u Tuzli, Tuzla
Zrnić Đ. (1987) „Simalacija procesa unutrašnjeg transporta“, Mašinski fakultet, Beograd
Vladić J. (2005) „Mehanizacija i tehnologija pretovara“, FTN Izdavaštvo, Novi Sad

**22. Web sources:**

(max. 687 characters)

**23. Applicable starting from the academic year:**

2015/2016.

**24. Adopted in the Faculty/Academy session:**

03.06.2015.