**Course Syllabus**

Academic year: 2020-2021

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| Institution | University of Petrosani |
| Faculty | Mechanical and Electrical Engineering |
| Field of study | Transportation and Traffic Engineering |
| Level | Master |
| Program of Study | Transport systems for industry, tourism and services |

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| Course | **Risk Assessment in Transportation** |
| Code | 2STITSOD16 |
| Year of Study(semester) | II (IV) |
| Number of hours | 84 |
| Number of credits | 8 |
| Professor | Professor, Ph.D. Roland MORARU |

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| **No.** | **Topic** |
| 1. | Provisions of national and European legislation on occupational risk assessment. Specific features in transportation |
| 2. | The structure of occupational injury and illness risk factors  |
| 3. | Basic concepts in industrial transportation risk analysis. Risk, hazard, vulnerability. Acceptable risk and significance of ALARP / ALARA concepts. |
| 4. | INCDPM method of occupational risk assessment in work microsystems. |
| 5. | Structural risk analysis. From the systemic approach to participatory risk management. Application of the systemic method in risk analysis. |
| 6. | Methods of risk estimation, analysis and assessment Fault tree and event tree. Success chart method and state space method. |
| 7. | Methods of risk assessment based on ergonomics LEST, ERGOS, SDF, SDQ, Renault methods. REBA, RULA, KIM tools |
| 8. | Unconventional methods of risk analysis and assessment and their applications. Analysis of action errors; Analysis of the evolution of the accident and safety barriers (AEB); Evaluation / analysis of changes. Cause-effect logic diagram (CELD); Cause Tree Method (CTM); Fault Tree Analysis (FTA); Hazard and operability study (HAZOP); Human Performance Enhancement System (SIPU) |
| 9. | Critical analysis of the main methods of risk assessment. Incident Investigations and Root Cause Analysis. General trends in the structure of methods. Strengths and limitations. The Kinney method and the subjective nature of risk assessments. Disadvantages and advantages. |
| 10. | Psychosocial risk assessment methods |
| 11. | Chemical, biological and ergonomic hazards. |
| 12. | Musculoskeletal hazards and risk control |
| 13. | Mechanical and non-mechanical hazards of machinery. Manual handling hazards and control measures. Manually operated load handling equipment. Powered load handling equipment |
| 14. | Ways to capitalize on the results of the professional risk assessment. Safety Behavior and Organizational Safety Culture. |