

Faculty of Transportation Engineering and Vehicle Enginee

1. Subject name Demand planning and inventory management Kereslet és készlettervezés 2. Subject name in Hungarian **BMEKOALM328** 4. Evaluation type exam grade 5. Credits 5 3. Code 1 (5) Practice 6. Weekly contact 2 (11) Lecture 1 (5) Lab hours 7. Curriculum Logistics 8. Role Specialization (sp) at Logistics Engineering MSc (L) **Engineering MSc** (L) 9. Working hours for fulfilling the requirements of the subject 150 **Contact hours** 56 **Preparation for** 15 **Homework** 40 seminars Exam preparation 15 **Reading written** 18 **Midterm** 6 materials preparation **10. Department Department of Material Handling and Logistics Systems** 11. Responsible Dr. Bóna Krisztián lecturer Dr. Bóna Krisztián, Sárdi Dávid **12. Lecturers 13. Prerequisites**

14. Description of lectures

The basic process of the demand planning. Defining and classification of the main input data of the demand planning, the data minig and the data preprocessing task. Mathematical modeling possibilities in the demand planning process. The statistical identification of the suitable mathematical models for the forecasting, the detection of the main statistical properties of the time series, identification of the trend process and the seasonality. Application of the identified forecasting models, parameter optimisation and prediction of the time series. The importance and several methods of the fine tuning in the demand planning. The key performance indicators of the demand planning, the interpretation and measurement of the forecast errors and accuraccy indicators. The basic process of the inventory planning. The necessary input data set of the inventory planning, data preprocessing. The definition and application of statistical methods and simulation tools for the investigation of the inventory planning process. Application of the specific costs, the service level and the reliability in the inventory planning. Defining and application of inventory control parameters, integration of the results into the inventory control systems. Measurement of demand and inventory planning efficiency. Specific planning tools regarding to the demand and inventory planning in the ERP systems. Specific resource planning areas in the enterprise logistics, the sales and operations planning process. The role of inventory and demand planning areas in the S&OP process.

15. Description of practices

Practicing the demand and inventory planning techniques where presented in the lectures, through numerical examples. Preparation of homework.

16. Description of labortory practices

Realization of demand and inventory planning examples within a computer lab.

17. Learning outcomes

A. Knowledge

- Knowledge of statistical methods for logistics time series investigation and knowledge of specific distribution types.
- Knowledge of data preparation steps, data cleansing and aggregation techniques.
- Knowledge of time series specific correlation functions.
- Knowledge of forecasting models and parameter optimisation techniques.
- The student knows the method of model selection by calculating specific errors.
- The student knows the particularity of deterministic inventory models, has knowledge of building deterministic inventory models.
- Knowledge of stochastic inventory models and optimal parameter calculation.
- B. Skills
 - Can apply the demand and inventory planning process in modelling approach.
 - Ability of recognition the connection between demand and inventory models, ability of building process structure.

- The student is capable creating forecasts with know models, has knowledge of parameter optimisation.
- The student is capable to create deterministic cost models independently.
- Ability of application deterministic inventory models, calculation optimal parameters.
- Ability of application stochastic inventory models, calculation optimal parameters.

C. Attitudes

- Student is opened to use math and information technology tools.
- Endeavor to understand and routinely use the methodology and tools required to solve the problems.

D. Autonomy and Responsibility

- Makes responsible and independent suggestions for planning problems.
- Takes responsibilities for the consequences of decisions made during the planning process.
- Uses system approach.

18. Requirements, way to determine a grade (obtain a signature)

The requirement of the signature is to fulfill the homework and one midterm test. The homework (20%), the test (30%) and the exam result (50%) are included in the final grade.

19. Opportunity for repeat/retake and delayed completion

The test can be retake one time until the last day of the semester. At the delayed submission period only the test or the homework can be perform.

20. Learning materials

Students can download the learning materials in pdf format from Moodle.

Effective date	10 October 2019	This Subject Datasheet is valid for	Inactive courses
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