Management Systems Course

Name of the subject: **Management Systems -MSc**	SUBJECT code:	Weekly hours: 4 **2 lectures+2 practices**	Credit: **8 ECTS**
Subject leader: **Dr Djordje Nikolić**	Academic Degree: **Assistant Professor**	Prerequisites: **Statistics, Theory of System, Decision Theory, Management Of Work Processes**	

Purpose: The aim of this course is to introduce to the students basic concepts of dynamic process modeling in organizations. Students will gain the knowledge and understandings of fundamental principles of mathematical models for discrete controlling systems, as well as critical awareness in using these models in order to solve management problems. Students will learn how to use spreadsheet scenarios for analyzing the process flows in the case of different business situations, also they will get competencies in explaining the obtain results of "what if" analysis based on the created simulation models.

Course description: Management Systems course addresses the advantage of using spreadsheet tools for modeling and simulation of different business process and systems. This course focuses on the quantitative methods for forecasting business states-situations, modeling of systems dynamic, discrete control of business systems, developing and using simulation model for different business situations.

Schedule	
Weeks	**Topics**
1.	**Forecasting in business situations:** Forecasting future states, Qualitative vs. quantitative forecasting methods, Time series, Components of time series, Time series methods…
2.	**continued:** Trend analysis, Linear trend method, Annual growth rate method
3.	**continued:** Exponential smoothing methods, Holt's Exponential smoothing, Winter's Exponential Smoothing, Regression Analysis.
4.	**Test**
5.	**Modeling system dynamic:** Models, Decision models…
6.	**continued**: Simulation models and simulation
7.	**Monte Carlo simulation:** Working examples
8.	**continued:** Working examples
9.	**continued:** Working examples
10.	**Discrete systems control**
11.	**Modeling material flows**
12.	**Spreadsheet simulation and optimization**: Working examples
13.	**continued**: Working examples
14.	**Test**

Final grade:

The grading structure is as follows:

Activity	Points
Final examination	30
Case study preparation and class presentations	10
Tests	40
Participation in class	20

Grading scale:

Points	Grade
0-50	5 (fail)
51-60	6 (satisfactory)
61-70	7 (good)
71-80	8 (very good)
81-90	9 (excellent)
91-100	10 (excellent- outstanding)

Compulsory literature:

1. Chung, C.A. (2004), Simulation modeling handbook: a practical approach, CRC Press.
2. Winston, W.Y. (2011), Microsoft Excel 2010: Data Analysis and Business Modeling, Microsoft Press.
3. Banks, J., Carson, J.S., Nelson, B.L., Nicol, D.M., (2010), Discrete-event system simulation 5th Edition, Prentice-Hall.

Supplemental literature:

1. Sweeney, D. J., Anderson, D. R., Williams, T.A., Camm, J. D., Martin, R. K. (2009), Quantitative Methods for Business, South-Western Cengage Learning, USA,