University of Bielsko-Biala

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| **The title of the course** | **Portfolio management and optimization using Excel** |
| **Faculty** | Faculty of Management and Transport |
| **The level of studies** | second |
| **Semester** | winter/summer |
| **The form of classes and number of hours** | 15 h |
| **Classes conducted for Polish students. Erasmus students can join them** | |
| **Language of instruction** | English |
| **The number of ECTS** | 3 |
| **Teacher** | Dominika Dusza (PhD in economics) |
| **The aims of the course (maximum 500 characters)** | The course aims at the presentation of the principles of modern portfolio theory and its applications to the technical and practical aspects of portfolio design.<br>Covered topics include measuring risk, diversification idea and criteria, optimal portfolio selection (creating, maintaining and evaluating the performance of investment portfolios). |
| **The content of the course: main topics and key ideas** | 1. Single asset risk and return analysis<br>2. Risk reduction and diversification<br>3. Portfolio expected risk and return – two asset case<br>4. Minimum variance portfolio and the Markowitz Efficient Frontier<br>5. Multi - asset portfolio – matrix calculus with Solver<br>6. Tobin's Theorem, Characteristic Market Line (CML) and Efficient Frontier with risk free assets<br>7. Market price of risk, security market line (SML) and single factor Sharpe's model<br>8. The CAPM – Capital Asset Pricing Model<br>9. Portfolio efficiency assessment using risk adjusted performance measurement – Sharpe Ratio, Treynor Ratio, Jensen Ratio |
| **Didactics methods** | Individual consulting<br>Class discussion |
| **Course requirements** | Individual literature studies<br>Pre-class preparation<br>Preparing and presenting final project |
| **Literature (basic and supplementary)** | **Basic literature:**<br>1. Elton, Edwin J. and Martin J. Gruber. *Modern Portfolio Theory and Investment* |

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| | *Analysis,* 5th edition, New York: John Wiley & Sons, Inc., 1995<br>2. Krysiak Z.: Portfolio development at risk : modelling strategic objectives at risk, Warsaw School of Economics, Warszawa 2015<br>3. Taggart, Jr, Robert A*. Quantitative Analysis for Investment Management*, Upper Saddle River, New Jersey: Prentice Hall, 1996.<br>**Supplementary literature:**<br>1. Luenberger, David G. Investment Science, New York: Oxford University Press, 1998.<br>2. Maginn, J. L., D. L. Tuttle, D. W. McLeavey, and J. E. Pinto (Eds.) (2007, March).Managing Investment Portfolios: A Dynamic Process (3 ed.). Wiley<br>3. Sharpe, William F., Gordon J. Alexander, and Jeffery V. Bailey. Investments, 6th edition, Upper Saddle River, NJ: Prentice Hall, 1999 |
| **The effects of the education**<br>- **knowledge**<br>- **skills**<br>- **social competences** | Knowledge:<br>1. Student knows the theoretical background for building asset portfolios<br>2. Student knows the methods for portfolio construction and different optimization goals<br>3. Student understands Risk Adjusted Performance Measures concept and its usage<br>Skills:<br>1. Student has the ability to use and interpret financial data<br>2. Student can use portfolio algebra and/or matrix calculations to construct optimal portfolios<br>3. Student can asses portfolio performance given a certain optimization criteria<br>Social competences:<br>1. Student has an understanding of the life long learning concept, can compete and broaden knowledge, rise personal and professional skills as well as competencies |