FACULTY Computer Science and Management / DEPARTMENT………………

**SUBJECT CARD**

**Name in Polish Zintegrowane systemy informatyczne**
**Name in English Management Information Systems**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code IEZ1204**
**Group of courses NO**

|  | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | 15 |  | 30 |  | 15 |
| Number of hours of total student workload (CNPS) | 60 |  | 60 |  | 30 |
| Form of crediting | Examination |  | crediting with grade |  | crediting with grade |
| For group of courses mark (X) final course |  |  |  |  |  |
| Number of ECTS points | 2 |  | 2 |  | 1 |
| including number of ECTS points for practical (P) classes |  |  | 2 |  | 1 |
| including number of ECTS points for direct teacher-student contact (BK) classes | 0,5 |  | 1 |  | 0,5 |

\*delete as applicable

---

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
Knowledge about:
1. essentials of informatics,
2. technologies of data operations,
3. information systems,
4. theory of organisation and management
5. essentials of enterprise management
6. basics of logistics

\

---

**SUBJECT OBJECTIVES**
C1 Knowledge of integrated management information systems (IMIS)
C2 Knowledge of the implementation of IMIS
C3 Ability to use ERP IMIS

**SUBJECT EDUCATIONAL EFFECTS**
relating to knowledge:
PEK_W03

relating to skills:
PEK_U04
PEK_U05

relating to social competences:

PEK_K02
PEK_K05

<div align="center">

## PROGRAMME CONTENT

</div>

| Form of classes - lecture | | Number of hours |
|---|---|---|
| Lec 1 | Managing the contemporary enterprise at market layouts. | 2 |
| Lec 2 | Typology of informational systems at the angle of primary criterions. Types MPR II/ERP. | 2 |
| Lec 3 | General characteristics of management information system sets. | 2 |
| Lec 4 | Computer aid management at areas: supply, production, stock, distribution | 2 |
| Lec 5 | Supporting marketing functioning by informatics management systems | 2 |
| Lec 6 | Informatics strategies of enterprise management. | 2 |
| Lec 7 | Choosing and implementation of system set. | 2 |
| Lec 8 | Conclusion | 1 |
| | Total hours | 15 |
| **Form of classes - class** | | **Number of hours** |
| **Form of classes - laboratory** | | **Number of hours** |
| Lab 1 | Introduction to ERP system | 2 |
| Lab 2 | General settings | 2 |
| Lab 3 | Data management in ERP system | 2 |
| Lab 4 | Reporting tools | 2 |
| Lab 5 | Financial functions | 2 |
| Lab 6 | HR functions | 2 |
| Lab 7 | Cost functions | 2 |
| Lab 8 | General ledger | 2 |
| Lab 9 | Assets | 2 |
| Lab 10 | Logistics | 2 |
| Lab 11 | Purchase orders | 2 |
| Lab 12 | Work orders | 2 |
| Lab 13 | MRP planning | 2 |
| Lab 14 | Accounting | 2 |
| Lab 15 | Conclusion | 2 |
| | Total hours | 30 |
| **Form of classes - seminar** | | **Number of hours** |
| Sem 1 | Introduction | 2 |
| Sem 2 | MIS systems and APICS | 2 |

| Sem 3 | Basic MIS systems | 2 |
|---|---|---|
| Sem 4 | Advanced MIS systems | 2 |
| Sem 5 | Integrated MIS systems | 2 |
| Sem 6 | New trends in IMIS systems | 2 |
| Sem 7 | Computer Integrated Manufacturing | 2 |
| Sem 8 | Conclusion | 1 |
| | Total hours | 15 |

## TEACHING TOOLS USED

N1. Traditional lecture
N2. Using ERP IT tool
N3. Self-learning

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| **Evaluation** (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_W03 | Exam (test) |
| F2 | PEK_U04 PEK_U05 PEK_K02 PEK_K05 | Evaluation of the seminar and lab work |

C = F1 + F2

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[1] James O'Brien, George Marakas: Management Information Systems, McGraw-Hill/Irwin, 2010
[2] Ken Laudon, Jane Laudon: Management Information Systems, Prentice Hall; 11 edition, 2009
[3] R. Kelly Rainer, Hugh J. Watson: Management Information Systems, Moving Business Forward, Wiley, 2012

### SECONDARY LITERATURE:

[1] Computerworld magazine

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Adam Wasilewski, adam.wasilewski@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Business Process Modeling**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY ………………..
AND SPECIALIZATION Business Information Systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| PEK_W03 | K2_ZARZ_W03 K2_ZARZ_W14 | C1 | Lec1-Lec7 | N1 |
| PEK_U04 PEK_U05 | K2_ZARZ_U05 K2_ZARZ_U13 | C2 C3 | Lab1 - Lab7 Proj1 – Proj7 | N1 N2 N3 |
| PEK_K02 PEK_K05 | K2_ZARZ_K01 K2_ZARZ_K02 | C3 | Proj1 – Proj7 | N2 N3 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

FACULTY **Computer Science and Management**

**SUBJECT CARD**

**Name in Polish Analiza danych biznesowych**
**Name in English Business Data analysis**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information System (BIS)**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code IEZ1205W, IEZ1205L**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **30** | | **15** | | |
| Number of hours of total student workload (CNPS) | **60** | | **60** | | |
| Form of crediting | **crediting with grade** | | **crediting with grade** | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **2** | | **2** | | |
| including number of ECTS points for practical (P) classes | | | **2** | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **1** | | **0,5** | | |

*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Basic knowledge of statistics

\

**SUBJECT OBJECTIVES**
C1 Getting to know the methods and techniques of business data analysis
C2 Gaining knowledge of statistical packages with particular emphasis on R environment supporting analytical processes.
C3 The ability to select and apply the methods of data analysis specific to the defined research problem.
C4 The ability to present and visualize the results of model building process.

**SUBJECT EDUCATIONAL EFFECTS**
relating to knowledge:
PEK_W01 – The student has knowledge of the methods and techniques of business data analysis, knows its assumptions and conditions of applicability.
relating to skills:
PEK_U01 – he/she is capable of planning and implementing the scheme of data analysis referring to the real problems known from business's practice
PEK_U02 – he/she is capable of using statistical packages as a tool supported analysis
relating to social competences:
PEK_K01 – he/she is well-prepared to critically evaluation of the problem's solutions and his/her views and arguments can defend using scientific research methods.

<div style="border: 1px solid black; height: 350px;"></div>

## PROGRAMME CONTENT

| Form of classes - lecture | | Number of hours |
|---|---|---|
| Lec 1 | From data to knowledge; types of business data, tools to support the process of data analysis and data visualization. | 2 |
| Lec 2 | Introduction to R environment: methods and class data storage in R, the structure of objects, missing values, the basics of R, comparison of IBM SPSS package. | 2 |
| Lec 3 | Basic methods of description and visualization of business data | 2 |
| Lec 4 | Sales forecasting - introduction | 2 |
| Lec 5 | Time series forecasting with exponential smoothing methods based on the state space approach. | 2 |
| Lec 6 | Seasonal autoregressive integrated moving-average models with covariates | 2 |
| Lec 7 | Functions and procedures that support the forecasting process in R | 1 |
| Lec 8 | Test | 1 |
| Lec 9 | Factor analysis – the basis and assumptions. | 2 |
| Lec 10 | Products positioning map (factor analysis). | 2 |
| Lec 11 | Modeling purchase decisions using multinomial logit models. | 2 |
| Lec 12 | Examples of the use of logit models in business practice implemented in R package. | 2 |
| Lec 13 | Discriminant analysis. | 2 |
| Lec 14 | Conjoint analysis as an instrument of research preferences. | 2 |
| Lec 15 | Market simulation and segmentation using conjoint analysis | 2 |
| Lec 16 | Test | 2 |
| | Total hours | **30** |
| Form of classes - laboratory | | Number of hours |
| Lab 1 | Introduction to R: programming language basics, data acquisition, selecting variables and observations for analysis. | 3 |
| Lab 2 | Presenting data (bar plots, histogram and kernel smooth, empirical distribution, dot charts, scatter plots etc.); basic data analysis using descriptive statistics. | 2 |
| Lab 3 | Time series analysis and forecasting | 2 |

| Lab 4 | Data reduction technique | 2 |
|---|---|---|
| Lab 5 | Perceptual and preference positioning maps (discriminant analysis and factor analysis) | 2 |
| Lab 6 | Discrete choice models with application to purchase decision | 2 |
| Lab 7 | Conjoint analysis | 2 |
| | Total hours | **15** |

## TEACHING TOOLS USED

N1. Presentation
N2. Videos
N3. Information lecture
N4. Case study
N5. Own work - preparation for laboratory

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| **Evaluation** (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_W01 | Two written tests |
| F2 | PEK_U01, PEK_U02 | Oral answers, a written report |
| P=F1+F2 | | |

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[1] Mooi E., Sarstedt M. (2011) *A Concise Guide to Market Research The Process, Data, and Methods Using IBM SPSS Statistics,* Springer.
[2] Kung-Sik Ch., Cryer J.D. (2008) *Time Series Analysis with Applications in R*, Springer.
[3] Hyndman R.., Koehler A.B., Ord J.K., Snyder R.D. (2008), *Forecasting with Exponential Smoothing. The State Space Approach*, Springer.
[4] Muenchen R.A. (2011) *R for SAS and SPSS Users*, Springer.

### SECONDARY LITERATURE:

[1] Chambers J.M. (2008) *Software for Data Analysis Programming with R*, Springer.
[2] Johnson R.A., Wichern D.W (2002), *Applied Multivariate Statistical Analysis*, Prentice Hall.

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Robert, Kapłon, robert@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Business Data analysis**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALIZATION **Business Information System (BIS)**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01** | K2_ZARZ_W13 <br> S2_BIS_W01 | C1, C2 | Lec1-Lec15 | N1-N4 |
| **PEK_U01** | K2_ZARZ_U14 <br> S2_BIS_U01 | C3, C4 | Lab2, Lab4-Lab7 | N2, N4, N5 |
| **PEK_U02** | K2_ZARZ_U12 <br> S2_BIS_U01 | C3, C4 | Lab1-Lab7 | N4, N5 |
| **PEK_K01** | K2_ZARZ_K05 <br> K2_ZARZ_K08 | C1, C2, C3 | Lec1-Lec15, lab1-Lab7 | N1-N5 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

Faculty of Computer Science and Management
**SUBJECT CARD**
**Name in Polish: Optymalizacja Dyskretna i Przepływy w Sieciach**
**Name in English: Discrete Optimization and Network Flows**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code: IEZ1206**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | 30 | | 15 | | |
| Number of hours of total student workload (CNPS) | 60 | | 60 | | |
| Form of crediting | crediting with grade | | crediting with grade | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | 2 | | 2 | | |
| including number of ECTS points for practical (P) classes | | | 2 | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | 1 | | 0.5 | | |

*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Basic skills in operations research, algebra and logic.
2. Basic skills in computer programming.
\

**SUBJECT OBJECTIVES**
C1. Presenting some basic network flow problems such as the shortest (longest) path, maximum flow, minimum cost flow and transportation problems.
C2. Presenting some basic combinatorial optimization problems such as the traveling salesperson, minimum spanning tree, minimum assignment, minimum cut and 0-1 knapsack problems.
C3. Showing some algorithms which can be applied to solve the problems listed in points C1 and C2, in particular presenting the network simplex algorithm for the minimum cost flow problem.
C4. Showing some practical applications of discrete optimization and network flow problems.
C5. Presenting some computer software which can be used to solve network flow and discrete optimization problems.

**SUBJECT EDUCATIONAL EFFECTS**
relating to knowledge:

S2_BIS_W02 - Zna i rozumie podstawy teoretyczne i zaawansowane metody formalne i
narzędzia wspomagania procesów decyzyjnych, w tym optymalizacji

dyskretnej, teorii decyzji i gier w rozwiązywaniu praktycznych problemów decyzyjnych.

relating to skills:

S2_BIS_U02 - Potrafi dobrać i zastosować zaawansowane metody formalne i narzędzia wspomagania procesów decyzyjnych.

relating to social competences:

K2_ZARZ_K04 - Wykazuje gotowość do identyfikowania, krytycznej analizy i rozstrzygania problemów pojawiających się w miejscu pracy. Potrafi przewidywać skutki podejmowanych decyzji.

K2_ZARZ_K05 - Wykazuje gotowość do samodzielnego elastycznego poszukiwania oraz krytycznego doboru metod i narzędzi rozwiązywania problemów pojawiających się w miejscu pracy.

| PROGRAMME CONTENT | |
|---|---|
| **Form of classes - lecture** | Number of h. |
| Lec 1  Introduction to network flow problems – basic definitions and models | 2 |
| Lec 2  Algorithms, running time of algorithms, network representations and some basic network algorithms | 2 |
| Lec 3  The shortest path problem – formulation and applications | 2 |
| Lec 4  Algorithms for solving the shortest path problem | 2 |
| Lec 5  The longest path problem and its applications to project scheduling (the critical path method) | 2 |
| Lec 6  The maximum flow and minimum cut problems – formulation and applications. Fulkerson-Ford algorithm for the maximum flow and minimum cut problems | 2 |
| Lec 7  Minimum cost flow problem – formulation and applications; cycle cancelling algorithm for the minimum cost flow problem | 2 |
| Lec 8  The network simplex algorithm for the minimum cost flow problem | 2 |
| Lec 9  The network simplex algorithm for the minimum cost flow problem and the sensitivity analysis | 2 |
| Lec 10 The transportation problem – formulation and applications | 2 |
| Lec 11 The network simplex algorithm for the transportation problem | 2 |
| Lec 12 The minimum assignment and the minimum spanning tree problems – formulation, applications and methods of solving | 2 |
| Lec 13 The traveling salesperson problem – formulation, applications and methods of solving | 2 |
| Lec 14 Some methods of solving hard discrete optimization problems – local search, branch and bound algorithm and Lagrangean relaxation. | 2 |

| Lec 15 | Written test | 2 |
|--------|-------------|---|
|        | **Total hours:** | **30** |

| **Form of classes - laboratory** | | **Number of hours** |
|-------|-------------------------------|---|
| Lab 1 | Introduction; presenting some computer software which can be used to solve network flow and discrete optimization problems | 1 |
| Lab 2 | Building and solving network flow models for practical problems | 2 |
| Lab 3 | Building and solving network flow models for practical problems | 2 |
| Lab 4 | Building and solving network flow models for practical problems | 2 |
| Lab 5 | Building and solving network flow models for practical problems | 2 |
| Lab 6 | Building and solving discrete optimization models for practical problems | 2 |
| Lab 7 | Building and solving discrete optimization models for practical problems | 2 |
| Lab 8 | Written test | 2 |
|       | **Total hours:** | **15** |

| **TEACHING TOOLS USED** |
|---|
| N1. Presentation |
| N2. Case study |
| N3. Solving exercises |
| N4. Using computer software |

**EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT**

| **Evaluation** (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P | S2_BIS_W02 | Written test |
| P | S2_BIS_U02 | Written test |
| C=1 | | |

| **PRIMARY AND SECONDARY LITERATURE** |
|---|
| **PRIMARY LITERATURE:** |

[1] R. K. Ahuja, T. L. Magnanti, J. B. Orlin. Network flows: theory, algorithms and applications. Prentice Hall, New Jersey 1993

[2] M. S. Bazaara, J.J. Jarvis, H.D. Sherali. Linear programming and network flows. John Wiley and Sons, 1990.

[3] A. Kasperski. Discrete optimization and network flows. Business Information Systems, PRINTPAP 2011

**SECONDARY LITERATURE:**

[1] E. L. Lawler. Combinatorial optimization. Network flows and matroids. Holt Reinhart and Wilson 1976.

[2] C. H. Papadimitriou, K. Steiglitz. Combinatorial optimization. Algorithms and complexity. Dover Publications Inc. 1998

[3] H. Taha. Operations research. An introduction. Prentice Hall 2011.

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

**Adam Kasperski, adam. kasperski@pwr.wroc.pl**

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Discrete Optimization and Network Flows**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
Management
AND SPECIALIZATION Business Information Systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01** | S2_BIS_W02 | C1, C2, C3, C4 | Lec1 –Lec14 | N1, N2, N3 |
| **PEK_U01** | S2_BIS_U02 | C4, C5 | Lab1 - Lab7 | N3, N4 |
| **PEK_K01** | K2_ZARZ_K04 K2_ZARZ_K05 | C4 | Lab1 – Lab7 | N3, N4 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

FACULTY Computer Science and Management / DEPARTMENT………………

## SUBJECT CARD

**Name in Polish Modelowanie procesów biznesowych**
**Name in English Business Process Modeling**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code IEZ2201**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | 15 | | 15 | 15 | |
| Number of hours of total student workload (CNPS) | 60 | | 60 | 60 | |
| Form of crediting | crediting with grade | crediting with grade | crediting with grade | crediting with grade | crediting with grade |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | 2 | | 2 | 2 | |
| including number of ECTS points for practical (P) classes | | | | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | 0,3 | | 0,3 | 0,3 | |

*delete as applicable

## PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
Knowledge about:
1. essentials of informatics,
2. technologies of data operations,
3. information systems,
4. theory of organisation and management
5. essentials of enterprise management
\

## SUBJECT OBJECTIVES
C1 Knowledge of approaches to business process modeling
C2 Knowledge of main BPM methodologies and notations
C3 Ability to state requirements and modeling business processes

| SUBJECT EDUCATIONAL EFFECTS | |
|---|---|
| relating to knowledge:<br>PEK_W04 | |
| relating to skills:<br>PEK_U05 | |
| relating to social competences:<br>PEK_K02 | |

| PROGRAMME CONTENT | |
|---|---|
| **Form of classes - lecture** | **Number of hours** |
| Lec 1 Introduction to process modeling | 2 |
| Lec 2 Process modeling as a optimalization tool | 2 |
| Lec 3 Methods of business process modeling | 2 |
| Lec 4 Business process perspectives | 2 |
| Lec 5 Perspective of processes | 2 |
| Lec 6 Maps of processes | 2 |
| Lec 7 BPR | 2 |
| Lec 8 Conclusion | 1 |
| Total hours | 15 |
| **Form of classes - class** | **Number of hours** |
| **Form of classes - laboratory** | **Number of hours** |
| Lab 1 Introduction to BPM IT tools | 2 |
| Lab 2 Designing of organization structure | 2 |
| Lab 3 Designing of data structure | 2 |
| Lab 4 Designing of functional tree | 2 |
| Lab 5 Designing of EPC models | 2 |
| Lab 6 Designing of business processes using BPMN | 2 |
| Lab 7 Planning the tusiness proces implementation | 2 |
| Lab 8 Conclusion | 1 |
| Total hours | 15 |
| **Form of classes - project** | **Number of hours** |
| Proj 1 Selectiong of the organizaction | 2 |
| Proj 2 Organizational chart | 2 |
| Proj 3 EPM model | 2 |
| Proj 4 Functional tree | 2 |
| Proj 5 EPC model | 2 |
| Proj 6 Value Add Chain model | 2 |
| Proj 7 BPMN model | 2 |
| Proj 8 Conclusion | 1 |

| Total hours | 15 |
|---|---|
| **Form of classes - seminar** | **Number of hours** |

## TEACHING TOOLS USED

N1. Traditional lecture
N2. Using BPM IT tool
N3. Self-learning

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| **Evaluation** (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_W04 | test |
| F2 | PEK_W04<br>PEK_U05<br>PEK_K02 | Evaluation of the project |
| C = F1 + F2 | | |

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[1] White, Stephen A, and Miers, Derek (2008 August 28). BPMN Modeling and Reference Guide. Future Strategies Inc.. ISBN 978-0-9777-5272-0.
[2] Debevoise, Neilson T, et. al (2008 July 4). The MicroGuide to Process Modeling in BPMN. BookSurge Publishing. ISBN 978-1-4196-9310-6.
[3] Briol P. (2008 April 12). BPMN, the Business Process Modeling Notation Pocket Handbook. LuLu. ISBN 978-1-4092-0299-8.

### SECONDARY LITERATURE:

[1] BABOK (www.iiba.org)
[2] Business Process Modeling forums

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Adam Wasilewski, adam.wasilewski@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Business Process Modeling**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY ………………..
AND SPECIALIZATION Business Information Systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W04** | K2_ZARZ_W06 K2_ZARZ_W13 | C1 | Lec1-Lec7 | N1 |
| **PEK_U05** | K2_ZARZ_U13 | C2 C3 | Lab1 - Lab7 Proj1 – Proj7 | N1 N2 N3 |
| **PEK_K02** | K2_ZARZ_K02 | C3 | Proj1 – Proj7 | N2 N3 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

FACULTY OF COMPUTER SCIENCE AND MANAGEMENT

**SUBJECT CARD**

**Name in Polish:** Obiektowe modelowanie biznesu
**Name in English:** Object Business Modeling
**Main field of study (if applicable):** Management
**Specialization (if applicable):** Business information systems
**Level and form of studies:** 2nd* level, full-time
**Kind of subject:** obligatory
**Subject code:** IEZ2202
**Group of courses:** NO

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | **30** | | |
| Number of hours of total student workload (CNPS) | **60** | | **60** | | |
| Form of crediting | **crediting with grade** | | **crediting with grade** | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **2** | | **2** | | |
| including number of ECTS points for practical (P) classes | | | **2** | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | | **0,5** | | |

*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Knowledge and capability from the area information system analysis.
2. Knowledge and capability from the area information system modeling.

\

**SUBJECT OBJECTIVES**
C1 To get knowledge about application possibilities of the object approach to business modeling.
C2 To acquire capability to building of object business models by means of unified modeling language UML.
C3 To acquire social competences specific for the activity connected to the application of the object approach to business modeling.

| SUBJECT EDUCATIONAL EFFECTS | |
|---|---|
| **SUBJECT EDUCATIONAL EFFECTS** | |

relating to knowledge:

PEK_W01 Knows the UML constructs having application to multi-aspect, object business modeling.

PEK_W02 Knows object business patterns and their use in business modeling.

PEK_W03 Understands the meaning of business modeling for the computerization concept.

relating to skills:

PEK_U01 Capable to build object business models by means of the UML language.

PEK_U02 Capable to use UML software tools.

relating to social competences:

PEK_K01 Capable unaided to develop her/his knowledge and skills, to collaborate and to work in groups, ready to identify, analyze and solve problems in the area of the object business modeling.

PEK_K02 Capable professionally to find and chose problem solving methods, to take the responsibility for them, pass over, convince and defend own views connecting with the application of the object business modeling.

| PROGRAMME CONTENT | |
|---|---|
| **Form of classes - lecture** | **Number of hours** |
| Lec 1 Introduction: the business model concept, the role of business models and business modeling motivation, business model components, UML in business modeling. | 1 |
| Lec 2 UML use case modeling: business use case concept, use case scenario, use case relationships, business actors and their relationships, use case diagram. | 1 |
| Lec 3 UML in conceptual modeling: object concept, attributes, object diagram, classes and relationships between them, class diagram. | 1 |
| Lec 4 UML in behavioral modeling: activity diagrams, interaction concept, objects and messages, interaction diagrams, state-chart diagrams. | 1 |
| Lec 5 Business architecture: the business architecture concept, business architecture characteristics, business as a system, concepts used to define the business, basic meta-model of business modeling concepts, UML extensions: processes, process steps, business events. | 1 |
| Lec 6 Business views: business vision view, business process view, business structure view, business behavior view. | 2 |
| Lec 7 Business rules: business rule concept, business rule syntax, rules in UML, specifying business rules with OCL. Business rules categories: derivations, constraints, existence rules, fuzzy business rules. | 2 |
| Lec 8 patterns: business pattern concept, types of patterns: business patterns, architectural patterns, design patterns, pattern categories, patterns in UML. | 1 |
| Lec 9 Resource and rule patterns. | 1 |
| Lec 10 Goal patterns: Business Goal Allocation, Business Goal Decomposition, Business Goal-Problem and process patterns: Action Workflow, Basic Process | 1 |

| | Structure, Process Instance State , Process Feedback. | |
|---|---|---|
| Lec 11 | <u>Process patterns</u>: Process Interaction, Process Layer Control, Process Layer Supply, Process Process-Instance, Resource Use, Time-To-Customer. | 1 |
| Lec 12 | <u>From Business Architecture to Software Architecture</u>: software development process, software architecture, principles of a good software architecture, using the business architecture to define the software architecture. | 1 |
| Lec 13 | Written test. | 1 |
| | Total hours | 15 |

| Form of classes - class | | Number of hours |
|---|---|---|
| Cl 1 | | |
| Cl 2 | | |
| Cl 3 | | |
| Cl 4 | | |
| .. | | |
| | Total hours | |

| Form of classes - laboratory | | Number of hours |
|---|---|---|
| Lab 1 | Introduction to the UML tool: functionality, user interface, structure of the project. | 2 |
| Lab 2 | Creating class model/diagram for the reality given by the natural language description. | 2 |
| Lab 3 | Creating class model/diagram for the reality given by the formalized document. | 2 |
| Lab 4 | Creating object model/diagram for class model/diagram given. | 2 |
| Lab 5 | Practical test. | 2 |
| Lab 6 | Creating state machine model/diagram for the reality given by the natural language description. | 2 |
| Lab 7 | Creating activity model/diagram for the reality given by the natural language description. | 2 |
| Lab 8 | Creating sequence model/diagram for the reality given by the natural language description. | 2 |
| Lab 9 | Creating sequence model/diagram for the reality given by the natural language description. | 2 |
| Lab 10 | Practical test. | 2 |
| Lab 11 | Creating business use case model/diagram for the reality given by the natural language description. | 2 |
| Lab 12 | Creating goal model/diagram for the reality given by the natural language. | 2 |
| Lab 13 | Creating proces  model/diagram for the reality given by the natural language description. | 2 |

| Lab 14 | Practical test. | 2 |
|---|---|---|
| Lab 15 | Summary and credit. | 2 |
| | Total hours | 30 |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | | |
| Proj 2 | | |
| Proj 3 | | |
| Proj 4 | | |
| … | | |
| | Total hours | |

| Form of classes - seminar | | Number of hours |
|---|---|---|
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| … | | |
| | Total hours | |

## TEACHING TOOLS USED

N1. Lecture
N2. Multimedia presentation
N3. Laboratory instruction
N4. Instruction during classes
N5. Attitude and behavior of the teacher
N6. Workstation with graphical operation system MS Windows and UML Tool
N7. Practical test
N8. Written test

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_W01, PEK_U01, PEK_U02 | Practical test. |
| F2 | PEK_W01, PEK_U01, PEK_U02 | Practical test. |
| F3 | PEK_W01, PEK_U01, PEK_U02 | Practical test. |
| P | PEK_W01, PEK_W02, PEK_W03, | Written test. |

| | PEK_K01(partially) | |
|---|---|---|
| | PEK_K02(partially) | |

P=1, F=3

## PRIMARY AND SECONDARY LITERATURE

**PRIMARY LITERATURE:**

[1]    Eriksson H.-E., Penker M.  "Business Modeling with UML: Business Patterns at Work", John Wiley & Sons © 2000, ISBN:0471295515

**SECONDARY LITERATURE:**

[2]    Roques P. "UML in Practice", John Wiley and Sons, 2004

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

**Witold Rekuć, witold.rekuc@pwr.wroc.pl**

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR
SUBJECT
**Object Business Modeling**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
Management
AND SPECIALIZATION Business information systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01** | K1_Zarz_W24, K1_Zarz_W26, S2BIS_W04, S2BIS_W05 | C1 | Lec 1, Lec 2, Lec 3, Lec 4, Lec 5, Lec 6, Lec 7 | N1, N2, N8 |
| **PEK_W02** | K1_ZARZ_W26, S2BIS_W04, S2BIS_W05 | C1 | Lec 8, Lec 9, Lec 10, Lec 11 | N1, N2, N8 |
| **PEK_W03** | K1_ ZARZ _W26, S2BIS_W04, S2BIS_W05 | C1 | Lec 12 | N1, N2, N8 |
| **PEK_U01** | K1_ ZARZ _U12, S2BIS_U03 | C2 | Lab 1, Lab 2, Lab 3, Lab 4, La6, Lab 7, Lab 8, Lab 9, Lab 11, Lab 12, Lab 13 | N3, N4, N6, N7 |
| **PEK_U02** | K1_ ZARZ _U12, S2BIS_U03 | C2 | Lab 1, Lab 2, Lab 3, Lab 4, Lab 6, Lab 7, Lab 8, Lab 9, Lab 11, Lab 12, Lab 13 | N3, N4, N6, N7 |
| **PEK_K01** | K1_ZARZ_K01, K1_ZARZ_K02, K1_ZARZ_K04 | C3 | In connection with all programme content | In connection with all teaching tools |
| **PEK_K02** | K1_ZARZ_K05, K1_ZARZ_K07, K1_ZARZ_K08, K1_ZARZ_K09 | C3 | In connection with all programme content | In connection with all teaching tools |

** - enter symbols for main-field-of-study/specialization educational effects
*** - from table above

WYDZIAŁ INFORMATYKI I ZARZĄDZANIA

**KARTA PRZEDMIOTU**

**Nazwa w języku polskim:** Obiektowe modelowanie biznesu
**Nazwa w języku angielskim:** **Object Business Modeling**
**Kierunek studiów (jeśli dotyczy):** Zarządzanie
**Specjalność (jeśli dotyczy):** **Business Information Systems (BIS)**
**Stopień studiów i forma:** II stopień, stacjonarna
**Rodzaj przedmiotu:** obowiązkowy
**Kod przedmiotu:** IEZ2202
**Grupa kursów:** NIE

| | Wykład | Ćwiczenia | Laboratorium | Projekt | Seminarium |
|---|---|---|---|---|---|
| Liczba godzin zajęć zorganizowanych w Uczelni (ZZU) | **15** | | **30** | | |
| Liczba godzin całkowitego nakładu pracy studenta (CNPS) | **60** | | **60** | | |
| Forma zaliczenia | **zaliczenie na ocenę** | | **zaliczenie na ocenę** | | |
| Dla grupy kursów zaznaczyć kurs końcowy (X) | | | | | |
| Liczba punktów ECTS | **2** | | **2** | | |
| w tym liczba punktów odpowiadająca zajęciom o charakterze praktycznym (P) | | | **2** | | |
| w tym liczba punktów ECTS odpowiadająca zajęciom wymagającym bezpośredniego kontaktu (BK) | **0,5** | | **0,5** | | |

\*niepotrzebne skreślić

**WYMAGANIA WSTĘPNE W ZAKRESIE WIEDZY, UMIEJĘTNOŚCI I INNYCH KOMPETENCJI**

1. Wiedza i umiejętności z zakresu analizy systemów informacyjnych.
2. Wiedza i umiejętności z zakresu modelowania systemów informacyjnych.

**CELE PRZEDMIOTU**

C1 Przyswojenie wiedzy o możliwościach zastosowania podejścia obiektowego do modelowania biznesu.

C2 Opanowanie umiejętności budowania obiektowych modeli biznesu i użycia do tego celu zunifikowanego języka modelowania UML.

C3 Nabycie kompetencji społecznych specyficznych dla działalności związanej z zastosowaniem modelowania obiektowego biznesu

## PRZEDMIOTOWE EFEKTY KSZTAŁCENIA

Z zakresu wiedzy:

PEK_W01 Zna konstrukcje języka UML mające zastosowanie do wieloaspektowego, obiektowego modelowania biznesu.

PEK_W02 Zna obiektowe wzorce biznesowe i ich użycie w modelowaniu biznesu.

PEK_W03 Rozumie znaczenie modelowania biznesu dla formułowania koncepcji informatyzacji.

Z zakresu umiejętności:

PEK_U01 Potrafi budować obiektowe modele biznesu posługując się językiem UML.

PEK_U02 Potrafi posługiwać się narzędziami programowymi UML.

Z zakresu kompetencji społecznych:

PEK_K01 Potrafi samodzielnie rozwijać swą wiedzę i umiejętności, współdziałać i pracować w zespołach, wykazuje gotowość do identyfikowania, analizy i rozwiązywania problemów w zakresie obiektowego modelowania biznesu.

PEK_K02 Potrafi w sposób profesjonalny poszukiwać oraz dobierać metody rozwiązywania problemów, brać za nie odpowiedzialność, przekazywać, przekonywać i bronić własnych poglądów związanych z obiektowym modelowaniem biznesu.

## TREŚCI PROGRAMOWE

| | Forma zajęć – wykład | Liczba godzin |
|---|---|---|
| Wy1 | Wprowadzenie: pojęcie modelu biznesu, rola modeli biznesu i motywacja, składniki modelu biznesu, UML w modelowaniu biznesu. | 1 |
| Wy2 | UML w modelowaniu przypadków użycia: pojęcie biznesowego przypadku użycia, scenariusz, powiązania między przypadkami użycia, aktorzy biznesowi i ich powiązania, diagram przypadków użycia. | 1 |
| Wy3 | UML w modelowaniu konceptualnym: pojęcie obiektu, atrybuty, diagram obiektów, klasy i związki między nimi, diagram klas. | 1 |
| Wy4 | UML w modelowaniu zachowania: diagramy czynności, pojęcie interakcji, obiekty i komunikaty, diagramy interakcji, diagramy maszyny skończenie stanowej | 1 |
| Wy5 | Architektura biznesu: pojęcie architektury biznesu, cechy architektury biznesu, biznes jako system, pojęcia służące definiowaniu biznesu jako systemu, bazowy metamodel kategorii modelowania biznesu, rozszerzenia UML: procesy, kroki procesów, zdarzenia biznesowe. | 1 |
| Wy6 | Perspektywy biznesowe: perspektywa wizji, perspektywa procesowa, perspektywa struktury biznesu, perspektywa zachowania biznesu. | 2 |
| Wy7 | Reguły biznesowe: pojęcie reguły biznesowej, składnia reguły biznesowej, reguły w UML, specyfikacja reguł w OCL. kategorie reguł biznesowych: produkcji, więzy, reguły istnienia, rozmyte reguły biznesowe. | 2 |
| Wy8 | Wzorce biznesowe: pojęcie wzorca biznesowego, typy wzorców: wzorce biznesu, wzorce architektoniczne, wzorce projektowe, kategorie wzorców, wzorce w UML | 1 |
| Wy9 | Wzorce środków i reguł. | 1 |

| Wy10 | Wzorce celów: alokacja celów biznesowych, dekompozycja celów biznesowych, problem – cel biznesowy. Wzorce procesowe: przepływ pracy, bazowy model procesu, stan instancji procesu , sprzężenia zwrotne. | 1 |
|---|---|---|
| Wy11 | Wzorce procesowe: interakcja procesów, procesowa warstwa kontroli, procesowa warstwa zasilania, instancje procesów, użycia środków, Time-To-Customer | 1 |
| Wy12 | Od architektury biznesu do architektury oprogramowania: proces budowy oprogramowania, architektura oprogramowania, zasady dobrej architektury oprogramowania, użycie architektury biznesu do definiowania architektury oprogramowania. | 1 |
| Wy13 | Sprawdzian pisemny | 1 |
| | Suma godzin | **15** |

| **Forma zajęć - ćwiczenia** | **Liczba godzin** |
|---|---|
| Ćw1 | |
| Ćw2 | |
| Ćw3 | |
| Ćw4 | |
| .. | |
| Suma godzin | **0** |

| | **Forma zajęć - laboratorium** | **Liczba godzin** |
|---|---|---|
| La1 | Narzędzie UML: funkcjonalność, interfejs użytkownika, projekt i jego struktura. Użytkowanie narzędzia UML. | 2 |
| La2 | Tworzenie modelu/diagramu klas dla rzeczywistości danej opisem naturalnym | 2 |
| La3 | Tworzenie modelu/diagramu klas dla rzeczywistości danej dokumentem sformalizowanym | 2 |
| La4 | Tworzenie modelu/diagramu obiektów dla zadanego diagram klas. | 2 |
| La5 | Sprawdzian praktyczny przy komputerze. | 2 |
| La6 | Tworzenie modelu/diagramu maszyny skończenie stanowej dla rzeczywistości danej opisem naturalnym. | 2 |
| La7 | Tworzenie modelu/diagramu czynności dla rzeczywistości danej opisem naturalnym. | 2 |
| La8 | Tworzenie modelu/diagramu sekwencji dla rzeczywistości danej opisem naturalnym. | 2 |
| La9 | Tworzenie modelu/diagramu komunikacji dla rzeczywistości danej opisem naturalnym | 2 |
| La10 | Sprawdzian praktyczny przy komputerze. | 2 |
| La11 | Tworzenie modelu/diagramu przypadków użycia dla rzeczywistości danej opisem naturalnym. | 2 |
| La12 | Tworzenie modelu/diagramu celów dla rzeczywistości danej opisem naturalnym. | 2 |
| La13 | Tworzenie modelu/diagramu procesów dla rzeczywistości danej opisem naturalnym. | 2 |
| La14 | Sprawdzian praktyczny przy komputerze. | 2 |
| La15 | Podsumowanie i zaliczenie | 2 |

| | Suma godzin | 30 |
|---|---|---|

| **Forma zajęć - projekt** | | **Liczba godzin** |
|---|---|---|
| Pr1 | | |
| Pr2 | | |
| Pr3 | | |
| Pr4 | | |
| … | | |
| | Suma godzin | **0** |

| **Forma zajęć - seminarium** | | **Liczba godzin** |
|---|---|---|
| Se1 | | |
| Se2 | | |
| Se3 | | |
| … | | |
| | Suma godzin | **0** |

| **STOSOWANE NARZĘDZIA DYDAKTYCZNE** |
|---|
| N1. Wykład informacyjno-problemowy |
| N2. Prezentacja multimedialna |
| N3. Instrukcja laboratoryjna |
| N4. Instruktaż podczas zajęć laboratoryjnych |
| N5. Postawy i zachowania prowadzącego zajęcia |
| N6. Stanowiska komputerowe umożliwiające pracę w (angielskojęzycznym) środowisku MS Windows oraz Enterprise Architect |
| N7. Sprawdzian praktyczny przy komputerze |
| N8. Sprawdzian pisemny |

## OCENA OSIĄGNIĘCIA PRZEDMIOTOWYCH EFEKTÓW KSZTAŁCENIA

| **Oceny** (F – formująca (w trakcie semestru), P – podsumowująca (na koniec semestru) | Numer efektu kształcenia | Sposób oceny osiągnięcia efektu kształcenia |
|---|---|---|
| F1 | PEK_W01, PEK_U01, PEK_U02 | Sprawdzian praktyczny przy komputerze |
| F2 | PEK_W01, PEK_U01, PEK_U02 | Sprawdzian praktyczny przy komputerze |
| F3 | PEK_W01, PEK_U01, PEK_U02 | Sprawdzian praktyczny przy komputerze |
| P | PEK_W01, PEK_W02, PEK_W03, PEK_K01(częściowo) PEK_K02(częściowo) | Sprawdzian pisemny |
| P=1, F=3 | | |

| LITERATURA PODSTAWOWA I UZUPEŁNIAJĄCA |
|---|

**LITERATURA PODSTAWOWA:**

[1]    Eriksson H.-E., Penker M.  "Business Modeling with UML: Business Patterns at Work", John Wiley & Sons © 2000, ISBN:0471295515

**LITERATURA UZUPEŁNIAJĄCA:**

[1]    Roques P. "UML in Practice", John Wiley and Sons, 2004

**OPIEKUN PRZEDMIOTU (IMIĘ, NAZWISKO, ADRES E-MAIL)**

Witold Rekuć, witold.rekuc@pwr.wroc.pl

# MACIERZ POWIĄZANIA EFEKTÓW KSZTAŁCENIA DLA PRZEDMIOTU
## Obiektowe modelowanie biznesu
### Z EFEKTAMI KSZTAŁCENIA NA KIERUNKU Zarządzanie
### I SPECJALNOŚCI Business information systems

| Przedmiotowy efekt kształcenia | Odniesienie przedmiotowego efektu do efektów kształcenia zdefiniowanych dla kierunku studiów i specjalności (o ile dotyczy)** | Cele przedmiotu*** | Treści programowe*** | Numer narzędzia dydaktycznego*** |
|---|---|---|---|---|
| **PEK_W01** | K1_Zarz_W24, K1_Zarz_W26, S2BIS_W04, S2BIS_W05 | C1 | Wy1, Wy2, Wy3, Wy4, Wy5, Wy6, Wy7 | N1, N2, N8 |
| **PEK_W02** | K1_ZARZ_W26, S2BIS_W04, S2BIS_W05 | C1 | Wy8, Wy9, Wy10, Wy11 | N1, N2, N8 |
| **PEK_W03** | K1_ ZARZ _W26, S2BIS_W04, S2BIS_W05 | C1 | Wy12 | N1, N2, N8 |
| **PEK_U01** | K1_ ZARZ _U12, S2BIS_U03 | C2 | La1, La2, La3, L4, La6, La7, La8, La9, La11, La12, La13 | N3, N4, N6, N7 |
| **PEK_U02** | K1_ ZARZ _U12, S2BIS_U03 | C2 | La1, La2, La3, La4, La6, La7, La8, La9, La11, La12, L13 | N3, N4, N6, N7 |
| **PEK_K01** | K1_ZARZ_K01, K1_ZARZ_K02, K1_ZARZ_K04 | C3 | W związku z wszystkimi treściami programowymi | W związku z wszystkimi narzędziami dydaktycznymi |
| **PEK_K02** | K1_ZARZ_K05, K1_ZARZ_K07, K1_ZARZ_K08, K1_ZARZ_K09 | C3 | W związku z wszystkimi treściami programowymi | W związku z wszystkimi narzędziami dydaktycznymi |

** - wpisać symbole kierunkowych/specjalnościowych efektów kształcenia

*** - z tabeli powyżej

COMPUTER SCIENCE AND MANAGEMENT FACULTY

## SUBJECT CARD

**Eksploracja danych**
**Data Mining**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems (BIS)**
**Level and form of studies: 2$^{st}$ level, full-time**
**Kind of subject: obligatory**
**Subject code: IEZ2203**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | **30** | | |
| Number of hours of total student workload (CNPS) | **90** | | **60** | | |
| Form of crediting | **Examination with grade** | | **Crediting with grade** | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **3** | | **2** | | |
| including number of ECTS points for practical (P) classes | | | **2** | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | | **1** | | |

*delete as applicable

## PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. Student has a basic knowledge of statistical tools.
2. Student has a basic practical skills in working with statistical software.

\

## SUBJECT OBJECTIVES
C1. Acquisition of data mining knowledge in business management processes.
C2. Getting skills in choosing and using decision support techniques in practical business problems solving.
C3. Getting social skills in information and communication techniques for management.

## SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:
PEK_W01: Student has a basic knowledge in construction and using some quantitative
       methods and computer technics in data mining useful in business information systems.
PEK_W02: Student has a basic knowledge in applying software in data mining.

relating to skills:
PEK_U01: Student can collection data for decision problem.
PEK_U02: Student can identify and propose ways of solving data mining problems.
PEK_U03: Student is able to build useful tools for data analysis for business decision
       processes.

relating to social competences:

PEK_K01: Student can enlarge his knowledge and abilities, can works in groups for solving management data mining problems.

PEK_K02: Student can find methods for solving decision problems, held accountable for his works, defend his views of the propose way of solving problems.

| PROGRAMME CONTENT | | |
|---|---|---|
| **Form of classes - lecture** | | **Number of hours** |
| Lec 1 | Data mining – methods and practical applications: examples. | 1 |
| Lec 2 | Pre-processing. | 2 |
| Lec 3 | Cluster analysis: nearest (Furthest) algorithm, group average (median) algorithm. | 2 |
| Lec 4 | k-means algorithm. | 2 |
| Lec 5 | Hierarchical classification algorithms. | 2 |
| Lec 6 | Classification and decision trees: CART, C4.5, C5.0 algorithms. | 2 |
| Lec 7 | Regression trees. | 2 |
| Lec 8 | Association Methods: A priori methods, FP-growth algorithm, one attribute rule algorithm. | 2 |
| | Total hours | 15 |
| **Form of classes - class** | | **Number of hours** |
| | | |
| **Form of classes - laboratory** | | **Number of hours** |
| | | |
| **Form of classes - project** | | **Number of hours** |
| Proj 1 | Data collection; team work. | 2 |
| Proj 2 | Pre-processing data; team work. | 2 |
| Proj 3 | Nearest (Furthest) algorithm implementation; team work. | 2 |
| Proj 4 | k-Means algorithm implementation; team work. | 2 |
| Proj 5 | Group average (median) algorithm implementation; team work. | 2 |
| Proj 6 | Hierarchical classification algorithm implementation; team work. | 2 |
| Proj 7; | Comparison results of cluster and classification algorithms; team | 4 |

| Proj 8 | work. | |
|---|---|---|
| Proj 9 | Presentation result; team work. | 2 |
| Proj 10, Proj 11 | Classification and regression tree implementation; team work. | 4 |
| Proj 12 | Comparison results of classification algorithms; team work. | 2 |
| Proj 13 | Presentation result; team work. | 2 |
| Proj 14 | Choosing the best method; team work. | 2 |
| Proj 15 | Final presentation; team work. | 2 |
| | Total hours | 30 |

| Form of classes - seminar | Number of hours |
|---|---|
| | |

## TEACHING TOOLS USED

N1. Multimedia presentation .
N2. Data collection.
N3. Computer data analysis.
N4. Team work.
N5. Written test (exam).

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_U01 | Report |
| F2 | PEK_U01, PEK_U02, PEK_U03 PEK_K01, PEK_K02 | Team presentation |
| P1 | PEK_W01, PEK_W02 | Written test. |
| P2 | PEK_U01, PEK_U02, PEK_U03 | Report of team work. |
| | | |

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[1] David H., Heikki M., Padhraic S., *Data Mining*, MIT, 2001.

[2] Han J., Kamber M.: *Data Mining. Concept and Techniques*, Elsevier Morgan Kaufmann Publishers, 2006.

[3] Han J., Jiawei : Data Mining: Concepts and Technics, 2006.

[4] Larose D.T.: *Discovering Knowledge in Data Analysis. An Introduction to Data Mining*, John Wiley & Sons, 2005.

[5] Shmueli, Galit, Data Mining for Business Intelligence: Consepts, Techniques, and Applications in Microsoft Office Excel with XLMiner, Wiley-Interscience, 2006.

[6] Sumathi S., Introduction to Data Mining and Its Application, 2006.

### SECONDARY LITERATURE:

[1] Cooc D.J., Holder L.B.: *Mining Graph Data, Hoboken*, N.J. : Wiley-Interscience, 2007.

[2] Morrison D.F.: *Multivariate Statistical Methods*, McGrow-Hill, 1990.

[3] Olson D.L. *Advance Data Mining Techniques*, Springer, 2008.

[4] Larose D. T., *Data Mining methods and Models*, IEEE Computer Society Press, 2006.

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

Barbara Gładysz; e-mail: barbara.gladysz@pwr.wroc.pl

## MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
Data Mining
## AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY Management
## AND SPECIALIZATION Business Information Systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| PEK_W01 (knowledge) | S2_BIS_W01 K2_ZARZ_W08 | C1, C2 | Lec01, Lec02, Lec03, Lec 04, Lec 05, Lec 06, Lec07, Lec 08 | N1, N5 |
| PEK_W02 (knowledge) | S2_BIS_W01 K2_ZARZ_W08 | C1, C2 | Lec01, Lec02, Lec03, Lec04, Lec05, Lec 06, Lec07, Lec08 | N1, N5 |
| PEK_U01 (skills) | K2_ZARZ_U03 | C1, C2 | Proj01 | N2, N4 |
| PEK_U02 (skills) | S2_BIS_U01 K2_ZARZ_U03 | C1, C2 | Proj02, …,Proj15 | N1, N3, N4 |
| PEK_U03 (skills) | S2_BIS_U01 K2_ZARZ_U03 | C1, C2 | Proj02, …,Proj15 | N1, N3, N4 |
| PEK_K01 (social competencies) | K2_ZARZ_K01 K2_ZARZ_K02 K2_ZARZ_K05 | C3 | Proj01, …,Proj15 | N4 |
| PEK_K02 (social competencies) | K2_ZARZ_K01 K2_ZARZ_K02 K2_ZARZ_K05 | C3 | Proj01, …,Proj15 | N4 |

** - enter symbols for main-field-of-study/specialization educational effects
*** - from table above

Faculty of Computer Science and Management

**SUBJECT CARD**

**Name in Polish: Gry i decyzje w zarządzaniu**
**Name in English: Games and decisions in management**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code: IEZ2204**
**Group of courses YES**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **30** | **15** | | | |
| Number of hours of total student workload (CNPS) | **90** | **60** | | | |
| Form of crediting | **Exam** | **Crediting with grade** | | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **3** | **2** | | | |
| including number of ECTS points for practical (P) classes | | **2** | | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **1** | **0.5** | | | |

*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Basic skills in operations research, algebra and logic.
\

**SUBJECT OBJECTIVES**
C1. Presenting various types of decision situations depending on the number of participants and the type of environment.
C2. Presenting noncooperative and cooperative games and their applications to decision making.
C3. Showing some methods of decision making under risk and uncertainty.
C4. Showing some practical applications of game theory and decision theory; solving exercises on game theory and decision theory.

**SUBJECT EDUCATIONAL EFFECTS**
relating to knowledge:

S2_BIS_W02 - Zna i rozumie podstawy teoretyczne i zaawansowane metody formalne i narzędzia wspomagania procesów decyzyjnych, w tym optymalizacji dyskretnej, teorii decyzji i gier w rozwiązywaniu praktycznych problemów decyzyjnych.

relating to skills:

S2_BIS_U02 - Potrafi dobrać i zastosować zaawansowane metody formalne i narzędzia wspomagania procesów decyzyjnych.

relating to social competences:

K2_ZARZ_K04 - Wykazuje gotowość do identyfikowania, krytycznej analizy i rozstrzygania problemów pojawiających się w miejscu pracy. Potrafi przewidywać skutki podejmowanych decyzji.

K2_ZARZ_K05 - Wykazuje gotowość do samodzielnego elastycznego poszukiwania oraz pojawiających się w miejscu pracy.krytycznego doboru metod i narzędzi

| PROGRAMME CONTENT | | |
|---|---|---|
| **Form of classes - lecture** | | **Number of h.** |
| Lec 1 | Classification of decision situations; games in extensive and normal form | 2 |
| Lec 2 | Games in extensive and normal form, the concepts of strategy and equilibrium | 2 |
| Lec 3 | Noncooperative 2-person zero-sum games – formulation, applications and methods of solving | |
| Lec 4 | Noncooperative 2-person nonzero-sum games – formulation, applications and methods of solving, part I | 2 |
| Lec 5 | Noncooperative 2-person nonzero-sum games – formulation, applications and methods of solving, part II | 2 |
| Lec 6 | Noncooperative $n$-person games – applications. Price of anarchy and price of stability. | 2 |
| Lec 7 | Cooperative 2-person games – applications and Nash solution concept | 2 |
| Lec 8 | Cooperative $n$-person games – applications, the concept of a core and Shapley value, part I | 2 |
| Lec 9 | Cooperative $n$-person games – applications, the concept of a core and Shapley value, part II | 2 |
| Lec 10 | Decision making under risk – von Neumann and Morgenstern utility theory | 2 |
| Lec 11 | Decision making under uncertainty – basic criteria for decision making | 2 |
| Lec 12 | Decision making under uncertainty – advanced topics and applications to optimization | 2 |
| Lec 13 | Group decision making, Arrow's paradox | 2 |
| Lec 14 | Applications of decision theory, part I | 2 |
| Lec 15 | Applications of decision theory, part II | 2 |
| | **Total hours:** | **30** |

| Form of classes - class | | Number of hours |
|---|---|---|
| Cl 1 | Applications and methods of solving 2-person zero-sum games | 1 |
| Cl 2 | Applications and methods of solving 2-person nonzero-sum games | 2 |
| Cl 3 | Applications and methods of solving 2-person nonzero-sum games | 2 |
| Cl 4 | Applications and methods of solving cooperative *n*-person games | 2 |
| Cl 5 | Applications and methods of solving cooperative *n*-person games | 2 |
| Cl 6 | Applications and methods of solving decision problems under risk and uncertainty | 2 |
| Cl 7 | Applications and methods of solving decision problems under risk and uncertainty | 2 |
| Cl 8 | Written test | 2 |
| | **Total hours** | **15** |

| TEACHING TOOLS USED |
|---|
| N1. Presentation |
| N2. Case study |
| N3. Solving exercises |

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| **Evaluation** (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P | S2_BIS_W02 | Exam |
| P | S2_BIS_U02 | Written test |
| C=1 | | |

| PRIMARY AND SECONDARY LITERATURE |
|---|

**PRIMARY LITERATURE:**

[1] R.D. Luce,  H. Raiffa. Games and decisions. Introduction and critical survey. Dover Publication Inc.  1957
[2] H. Peters. Game Theory. A multi-level approach. Springer 2008
[3] R. Myerson. Game Theory: Analysis of conflict, Harvard University Press, 1997

**SECONDARY LITERATURE:**

[1] M. Osborne, A. Rubinstein. A course in game theory. MIT 1994
[2] Algorithmic game theory. N. Nisan, T. Roughgarden, E. Tardos, V. Vazirani (eds.). Cambridge University Press 2007
[3] E. Gura, M. B. Maschler. Insights into game theory. An alternative mathematical experience. Cambridge University Press 2008
[4] A. Kelly. Decision making using game theory. An introduction for managers. Cambridge University Press 2003

| SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS) |
|---|
| Adam Kasperski, adam. kasperski@pwr.wroc.pl |

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR
SUBJECT
**Games and decisions in management**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
Management
AND SPECIALIZATION Business Information Systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| PEK_W01 | S2_BIS_W02 | C1, C2, C3 | Lec1 –Lec15 | N1, N2, N3 |
| PEK_U01 | S2_BIS_U02 | C1, C2, C3, C4 | Cl1 - Cl7 | N2, N3 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

FACULTY OF COMPUTER SCIENCE AND MANAGEMENT

**SUBJECT CARD**

**Name in Polish:**
**Name in English:** E-economy
**Main field of study (if applicable):** Management
**Specialization (if applicable):** Business information systems
**Level and form of studies:** 2nd level, full-time
**Kind of subject:** obligatory
**Subject code:** IEZ2205
**Group of courses:** NO

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | | | |
| Number of hours of total student workload (CNPS) | **90** | | | | |
| Form of crediting | **crediting with grade** | | | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **3** | | | | |
| including number of ECTS points for practical (P) classes | | | | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | | | | |

*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. Basic knowledge about management in organization.

2. Basic knowledge about computer networks, Internet and Internet websites

\

**SUBJECT OBJECTIVES**

C1 To prepare students (to give them the foundations of technical and economic infrastructure) for starting a business activity using modern technologies and for using them safely in everyday life.

**SUBJECT EDUCATIONAL EFFECTS**

relating to knowledge:
PEK_W01. Knows the basis of electronic economy and knows how to carry successfully business activity in Internet

**PROGRAMME CONTENT**

| Form of classes - lecture | Number of hours |
|---|---|
| Lec 1 Development of the Internet. Idea of e-economy. | 2 |
| Lec 2 Models of e-business. | 2 |

| Lec 3 | e-Commerce on B2B, B2C and C2C markets. | 2 |
|-------|------------------------------------------|---|
| Lec 4 | Methods of payment in the Internet. | 2 |
| Lec 5 | e-administration, e-government. | 2 |
| Lec 6 | Mobility, security. | 2 |
| Lec 7 | Technologies | 2 |
| Lec 8 | Written test | 1 |
| | Total hours | 15 |

| Form of classes - class | Number of hours |
|-------------------------|-----------------|
| Cl 1 | |
| Total hours | |

| Form of classes - laboratory | Number of hours |
|-------------------------------|-----------------|
| Lab 1 | |
| Total hours | |

| Form of classes - project | Number of hours |
|----------------------------|-----------------|
| Proj 1 | |
| Total hours | |

| Form of classes - seminar | Number of hours |
|----------------------------|-----------------|
| Sem 1 | |
| Total hours | |

| TEACHING TOOLS USED |
|---------------------|
| N1. Lecture<br>N2. Multimedia presentation<br>N3. Attitude and behavior of the teacher<br>N4. Written test |

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| **Evaluation** (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P | PEK_W01 | Written test |
| P = 1 | | |
| **PRIMARY AND SECONDARY LITERATURE** | | |

**PRIMARY LITERATURE:**

    [1] Chaffey D., "E-Business and E-Commerce Management", Longman, 2007.

    [2] Laudon K. C, Traver C. G., "E-commerce: business, technology, society", Prentice Hall, 2006.

    [3] Awad E. M., "Electronic commerce: from vision to fulfillment", Pearson/Prentice Hall, 2006.

**SECONDARY LITERATURE:**

    [1] Internet sites

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

**Ewa Prałat, ewa.pralat@pwr.wroc.pl**

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**E-economy**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALIZATION **Business information systems**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| PEK_W01 | S2_BIS_W03 | C1 | Lec1-Lec8 | N1, N2, N3, N4 |

    ** - enter symbols for main-field-of-study/specialization educational effects

    *** - from table above

FACULTY OF COMPUTER SCIENCE AND MANAGEMENT

**SUBJECT CARD**

**Name in Polish:** Obiektowe modelowanie biznesu
**Name in English:** **Business Object Modeling**
**Main field of study (if applicable):** Management
**Specialization (if applicable):** **Business information systems**
**Level and form of studies:** 2nd* level, full-time
**Kind of subject:** obligatory
**Subject code:** **IEZ2206**
**Group of courses:** NO

|  | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | **30** | | |
| Number of hours of total student workload (CNPS) | **60** | | **60** | | |
| Form of crediting | **crediting with grade** | | **crediting with grade** | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **2** | | **2** | | |
| including number of ECTS points for practical (P) classes | | | **2** | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | | **1,0** | | |

*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Knowledge and capability from the area information system analysis.
2. Knowledge and capability from the area information system modeling.

\

**SUBJECT OBJECTIVES**
C1 To get knowledge about application possibilities of the object approach to business modeling.
C2 To acquire capability to building of object business models by means of unified modeling language UML.
C3 To acquire social competences specific for the activity connected to the application of the object approach to business modeling.

| SUBJECT EDUCATIONAL EFFECTS |
|---|

**relating to knowledge:**

PEK_W01 Knows the UML constructs having application to multi-aspect, object business modeling.

PEK_W02 Knows object business patterns and their use in business modeling.

PEK_W03 Understands the meaning of business modeling for the computerization concept.

**relating to skills:**

PEK_U01 Capable to build object business models by means of the UML language.

PEK_U02 Capable to use UML software tools.

**relating to social competences:**

PEK_K01 Capable unaided to develop her/his knowledge and skills, to collaborate and to work in groups, ready to identify, analyze and solve problems in the area of the object business modeling.

PEK_K02 Capable professionally to find and chose problem solving methods, to take the responsibility for them, pass over, convince and defend own views connecting with the application of the object business modeling.

| PROGRAMME CONTENT | |
|---|---|
| **Form of classes - lecture** | **Number of hours** |
| Lec 1 Introduction: the business model concept, the role of business models and business modeling motivation, business model components, UML in business modeling. | 1 |
| Lec 2 UML use case modeling: business use case concept, use case scenario, use case relationships, business actors and their relationships, use case diagram. | 1 |
| Lec 3 UML in conceptual modeling: object concept, attributes, object diagram, classes and relationships between them, class diagram. | 1 |
| Lec 4 UML in behavioral modeling: activity diagrams, interaction concept, objects and messages, interaction diagrams, state-chart diagrams. | 1 |
| Lec 5 Business architecture: the business architecture concept, business architecture characteristics, business as a system, concepts used to define the business, basic meta-model of business modeling concepts, UML extensions: processes, process steps, business events. | 1 |
| Lec 6 Business views: business vision view, business process view, business structure view, business behavior view. | 2 |
| Lec 7 Business rules: business rule concept, business rule syntax, rules in UML, specifying business rules with OCL. Business rules categories: derivations, constraints, existence rules, fuzzy business rules. | 2 |
| Lec 8 patterns: business pattern concept, types of patterns: business patterns, architectural patterns, design patterns, pattern categories, patterns in UML. | 1 |
| Lec 9 Resource and rule patterns. | 1 |
| Lec 10 Goal patterns: Business Goal Allocation, Business Goal Decomposition, Business Goal-Problem and process patterns: Action Workflow, Basic Process | 1 |

| | | |
|---|---|---|
| | Structure, Process Instance State , Process Feedback. | |
| Lec 11 | Process patterns: Process Interaction, Process Layer Control, Process Layer Supply, Process Process-Instance, Resource Use, Time-To-Customer. | 1 |
| Lec 12 | From Business Architecture to Software Architecture: software development process, software architecture, principles of a good software architecture, using the business architecture to define the software architecture. | 1 |
| Lec 13 | Written test. | 1 |
| | Total hours | 15 |

| Form of classes - class | | Number of hours |
|---|---|---|
| Cl 1 | | |
| Cl 2 | | |
| Cl 3 | | |
| Cl 4 | | |
| .. | | |
| | Total hours | |

| Form of classes - laboratory | | Number of hours |
|---|---|---|
| Lab 1 | Introduction to the UML tool: functionality, user interface, structure of the project. | 2 |
| Lab 2 | Creating class model/diagram for the reality given by the natural language description. | 2 |
| Lab 3 | Creating class model/diagram for the reality given by the formalized document. | 2 |
| Lab 4 | Creating object model/diagram for class model/diagram given. | 2 |
| Lab 5 | Practical test. | 2 |
| Lab 6 | Creating state machine model/diagram for the reality given by the natural language description. | 2 |
| Lab 7 | Creating activity model/diagram for the reality given by the natural language description. | 2 |
| Lab 8 | Creating sequence model/diagram for the reality given by the natural language description. | 2 |
| Lab 9 | Creating sequence model/diagram for the reality given by the natural language description. | 2 |
| Lab 10 | Practical test. | 2 |
| Lab 11 | Creating business use case model/diagram for the reality given by the natural language description. | 2 |
| Lab 12 | Creating goal model/diagram for the reality given by the natural language. | 2 |
| Lab 13 | Creating proces model/diagram for the reality given by the natural language description. | 2 |

| Lab 14 | Practical test. | 2 |
|---|---|---|
| Lab 15 | Summary and credit. | 2 |
| | Total hours | 30 |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | | |
| Proj 2 | | |
| Proj 3 | | |
| Proj 4 | | |
| … | | |
| | Total hours | |

| Form of classes - seminar | | Number of hours |
|---|---|---|
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| … | | |
| | Total hours | |

## TEACHING TOOLS USED

N1. Lecture
N2. Multimedia presentation
N3. Laboratory instruction
N4. Instruction during classes
N5. Attitude and behavior of the teacher
N6. Workstation with graphical operation system MS Windows and UML Tool
N7. Practical test
N8. Written test

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_W01, PEK_U01, PEK_U02 | Practical test. |
| F2 | PEK_W01, PEK_U01, PEK_U02 | Practical test. |
| F3 | PEK_W01, PEK_U01, PEK_U02 | Practical test. |
| P | PEK_W01, PEK_W02, PEK_W03, | Written test. |

| | PEK_K01(partially) | |
| --- | --- | --- |
| | PEK_K02(partially) | |

P=1, F=3

## PRIMARY AND SECONDARY LITERATURE

**PRIMARY LITERATURE:**

[1]    Eriksson H.-E., Penker M.  "Business Modeling with UML: Business Patterns at Work", John Wiley & Sons © 2000, ISBN:0471295515

**SECONDARY LITERATURE:**

[2]    Roques P. "UML in Practice", John Wiley and Sons, 2004

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

**Witold Rekuć, witold.rekuc@pwr.wroc.pl**

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Business Object Modeling**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
Management
AND SPECIALIZATION Business information systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01** | K1_Zarz_W24, K1_Zarz_W26, S2BIS_W04, S2BIS_W05 | C1 | Lec 1, Lec 2, Lec 3, Lec 4, Lec 5, Lec 6, Lec 7 | N1, N2, N8 |
| **PEK_W02** | K1_ZARZ_W26, S2BIS_W04, S2BIS_W05 | C1 | Lec 8, Lec 9, Lec 10, Lec 11 | N1, N2, N8 |
| **PEK_W03** | K1_ ZARZ _W26, S2BIS_W04, S2BIS_W05 | C1 | Lec 12 | N1, N2, N8 |
| **PEK_U01** | K1_ ZARZ _U12, S2BIS_U03 | C2 | Lab 1, Lab 2, Lab 3, Lab 4, La6, Lab 7, Lab 8, Lab 9, Lab 11, Lab 12, Lab 13 | N3, N4, N6, N7 |
| **PEK_U02** | K1_ ZARZ _U12, S2BIS_U03 | C2 | Lab 1, Lab 2, Lab 3, Lab 4, Lab 6, Lab 7, Lab 8, Lab 9, Lab 11, Lab 12, Lab 13 | N3, N4, N6, N7 |
| **PEK_K01** | K1_ZARZ_K01, K1_ZARZ_K02, K1_ZARZ_K04 | C3 | In connection with all programme content | In connection with all teaching tools |
| **PEK_K02** | K1_ZARZ_K05, K1_ZARZ_K07, K1_ZARZ_K08, K1_ZARZ_K09 | C3 | In connection with all programme content | In connection with all teaching tools |

** - enter symbols for main-field-of-study/specialization educational effects
*** - from table above

FACULTY OF COMPUTER SCIENCE AND MANAGEMENT

## SUBJECT CARD

**Name in Polish: Badania Operacyjne**
**Name in English: Operations Research**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code: MAZ1201**
**Group of courses YES**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | **30** | | |
| Number of hours of total student workload (CNPS) | **60** | | **60** | | |
| Form of crediting | **Examination** | | **Crediting with grade** | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **2** | | **2** | | |
| including number of ECTS points for practical (P) classes | | | **2** | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0.5** | | **1** | | |

*delete as applicable

### PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. Basic skills in algebra, logic and computer programming.
\

### SUBJECT OBJECTIVES
C1. Presenting linear programming problems and their applications to management.
C2. Presenting some methods of solving linear programming problems, in particular the simplex algorithm and the branch and bound method for solving integer programs.
C3. Showing some methods of model building and postoptimality analysis
C4. Presenting some computer software which can be used to solve linear programming problems.

### SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:

K2_ZARZ_W13 - Zna zasady budowy modeli ekonometrycznych i symulacyjnych. Ma specjalistyczną wiedzę w zakresie modelowania ilościowego i prognozowania stanów i procesów w organizacji.

relating to skills:

K2_ZARZ_U10 - Potrafi stosować metody badań operacyjnych jako narzędzia

wspomagającego zaawansowane analizy decyzyjne.

K2_ZARZ_U18 - Potrafi formułować i wyczerpująco uzasadniać opinie, wygłaszać prezentacje problemów z zakresu nauk o zarządzaniu, na tematy związane ze środowiskiem pracy, a także uczestniczyć w dyskusjach naukowych i zawodowych - w języku polskim i obcym.

relating to social competences:

| PROGRAMME CONTENT | |
|---|---|
| **Form of classes - lecture** | **Number of hours** |
| Lec 1 History and methodology of operations research; linear programming problems and the graphical method of solving linear programming problems | 2 |
| Lec 2 The simplex algorithm for solving linear programming problems | 2 |
| Lec 3 Sensitivity analysis in linear programming problems | 2 |
| Lec 4 Integer linear programming problems and their applications to advanced modeling | 2 |
| Lec 5 Integer linear programming problems and their applications to advanced modeling | 2 |
| Lec 6 The Branch and bound and cutting plane algorithms for solving integer linear programming problems | 2 |
| Lec 7 Multicriteria linear programming problems – applications and methods of solving | 2 |
| Lec 8 Repetition and preparation for the exam | 1 |
| **Total hours:** | **1** |

| **Form of classes - laboratory** | **Number of hours** |
|---|---|
| Lab 1 Introduction; presenting some computer software for solving liner programming problems. | 2 |
| Lab 2 Building and solving linear programming models for practical problems | 2 |
| Lab 3 Building and solving linear programming models for practical problems | 2 |
| Lab 4 Building and solving linear programming models for practical problems | 2 |
| Lab 5 Building and solving linear programming models for practical problems | 2 |
| Lab 6 The simplex algorithm for solving linear programming problems | 2 |
| Lab 7 Sensitivity analysis of solutions of linear programming problems | 2 |
| Lab 8 Building and solving integer linear programming models for practical problems | 2 |

| Lab 9 | Building and solving integer linear programming models for practical problems | 2 |
|---|---|---|
| Lab10 | Building and solving integer linear programming models for practical problems | 2 |
| Lab 11 | Building and solving integer linear programming models for practical problems | 2 |
| Lab 12 | Building and solving integer linear programming models for practical problems | 2 |
| Lab 13 | Branch and bound algorithm for solving integer linear programming problems | 2 |
| Lab 14 | Repetition and preparation for the test | 2 |
| Lab 15 | Written test | 2 |
| | **Total hours:** | **30** |

| TEACHING TOOLS USED |
|---|
| N1. Presentation<br>N2. Case study<br>N3. Solving exercises<br>N4. Using computer software |

### EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| **Evaluation** (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P1 | K2_ZARZ_W13 | Exam |
| P2 | K2_ZARZ_U10 | Written test |
| C | | |

| PRIMARY AND SECONDARY LITERATURE |
|---|
| **PRIMARY LITERATURE:**<br>[1] H. Taha. Operations research. An introduction,  Prentice Hall 2011<br>[2] F. S. Hiller, G. J. Liberman. Introduction to operations research, Mc Graw Hill 2003<br>[3] W. L. Winston. Operations research: applications and algorithms. PWS-KENT Publishing Company 1987<br>[4] M. Kulej. Operations research. Business Information Systems. PRINTPAP, 2011<br>**SECONDARY LITERATURE:**<br>[1] H. P. Williams. Model building in mathematical programming. Wiley 1990.<br>[2] R.K. Ahuja, T. L. Magnanti, J.  B. Orlin. Network flows: theory algorithms and applications. Prentcice Hall, Inc., 1993<br>[3] A. Schrijver. Theory of linear and integer programming,  John Wiley & Sons, 1998<br>[4] R. Garfinkel, G.L. Nemhauser. Integer programming, Wiley 1972 |

| SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS) |
|---|
| Adam Kasperski, adam.kasperski@pwr.wroc.pl |

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Operations Research**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY Management
AND SPECIALIZATION Business Information Systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01** | K2_ZARZ_W13 | C1, C3, C3 | Lec1 -Lec8 | N1,N2,N3 |
| **PEK_U01** | K2_ZARZ_U10 K2_ZARZ_U18 | C3, C4 | Lab1- Lab14 | N2, N3, N4 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

Faculty of Computer Science and Management

## SUBJECT CARD

**Name in Polish Statystyka biznesowa**
**Name in English Business Statistics**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information systems**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code    MAZ1202**
**Group of courses NO**

|  | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** |  | **15** |  |  |
| Number of hours of total student workload (CNPS) | **60** |  | **60** |  |  |
| Form of crediting | **crediting with grade** |  | **crediting with grade** |  |  |
| For group of courses mark (X) final course |  |  |  |  |  |
| Number of ECTS points | **2** |  | **2** |  |  |
| including number of ECTS points for practical (P) classes |  |  | **1** |  |  |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** |  | **0,5** |  |  |

\*delete as applicable

 **PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Mathematics
\

### SUBJECT OBJECTIVES

C1 Presenting to the listeners elements of statistics and probability theory.

C2 Exercises are offered for practice in using statistical computer packages

### SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:
PEK_W01 He knows the methods of data analysis and methods of representation
PEK_W02 He knows and understands the theoretical foundations and advanced formal
methods and tools for statistics.
relating to skills:
PEK_U01 He can choose the sources of information and use them to solve complex
management problems and issues in the organization.
relating to social competences:
PEK_K01 – He recognizes the significance and limitations associated with the use of statistical
data

### PROGRAMME CONTENT

| **Form of classes - lecture** | **Number of hours** |
|---|---|

| Lec 1 | One random variables and their distributional functions | 2 |
|---|---|---|
| Lec 2 | Multi-dimensional random variables and their distributional functions | 2 |
| Lec 3 | Independence of multi random variables and their parameters. Central- limit theorem | 2 |
| Lec 4 | Estimating the mean and variance for population. The structure of population and its characteristics | 2 |
| Lec 5 | Estimating the mean and variance for grouped data. The distribution of the most important statistics | 2 |
| Lec 6 | Confidence intervals | 2 |
| Lec 7 | Parametric and non-parametric tests | 3 |
| | Total hours | 15 |

| Form of classes - class | | Number of hours |
|---|---|---|
| Cl 1 | | |
| Cl 2 | | |
| Cl 3 | | |
| Cl 4 | | |
| .. | | |
| | Total hours | |

| Form of classes - laboratory | | Number of hours |
|---|---|---|
| Lab 1 | The average values, variability and distribution of elements in a sample | 2 |
| Lab 2 | The average values, variability and distribution of elements in a sample – cont. | 2 |
| Lab 3 | Calculating probabilities for given random variables | 2 |
| Lab 4 | Calculating probabilities for given random variables – cont. | 2 |
| Lab 5 | The central limit theorem | 2 |
| Lab 6 | Confidence intervals | 2 |
| Lab 7 | Parametric hypotheses | 3 |
| | Total hours | 15 |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | | |
| Proj 2 | | |
| Proj 3 | | |
| Proj 4 | | |
| … | | |
| | Total hours | |

| Form of classes - seminar | | Number of hours |
|---|---|---|
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| … | | |

| | | |
|---|---|---|
| | Total hours | |

## TEACHING TOOLS USED

N1. Informative lecture
N2. Computer packages
N3. Case study

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P | PEK_W01, PEK_W02 | test |
| P=1 | | |

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[1] Aczel A. D., Sounderpandian J.: Complete Business Statistics, MacGraw-Hill, Irwin, 2009
[2] Mercik J.: BUSINESS STATISTICS. Six Lectures on Statistics, Wroclaw University of Technology Press, Wroclaw, 2011
[3]
[4]

### SECONDARY LITERATURE:

[1] Any text-book with "statistics" in its title
[2]
[3]

### SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Prof. Jacek Mercik, jacek.mercik@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Business Statistics**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
**AND SPECIALIZATION Business Information Systems**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01 (knowledge)** | K2_ZARZ_W07, K2_ZARZ_W13 | C1, C2 | Lec1-Lec7 Lab1-Lab7 | N1, N2, N3 |
| **PEK_W02** | K2_ZARZ_W07, K2_ZARZ_W13 | C1, C2 | Lec1-Lec7 Lab1-Lab7 | N1, N2, N3 |
| **PEK_U01 (skills)** | K2_ZARZ_U03, K2_ZARZ_U08, K2_ZARZ_U11 K2_ZARZ_U12, K2_ZARZ_U14 | C1, C2 | Lec1-Lec7 Lab1-Lab7 | N1, N2, N3 |
| **PEK_K01 (competences)** | K2_ZARZ_K09 | C1, C2 | Lec1-Lec7 Lab1-Lab7 | N1, N2, N3 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

Faculty of Computer Science and Management

## SUBJECT CARD

**Name in Polish: Ekonometria**
**Name in English: Econometrics**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information systems**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code    MAZ1203**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | **15** | | |
| Number of hours of total student workload (CNPS) | **60** | | **60** | | |
| Form of crediting | **crediting with grade** | | **crediting with grade** | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **2** | | **2** | | |
| including number of ECTS points for practical (P) classes | | | **2** | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | | **0,5** | | |

\*delete as applicable

---

 **PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Mathematics
2. Business Statistics
\

---

### SUBJECT OBJECTIVES
C1 Knowledge and technology of econometric modeling and application to economy

### SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:
PEK_W01 He knows the methods of data analysis and methods of representation
PEK_W02 He knows and understands the theoretical foundations and advanced formal
methods of econometrics
relating to skills:
PEK_U01 He can choose the sources of information and use them to model complex
management problems and issues in the organization via econometrics
relating to social competences:
PEK_K01 He recognizes the significance and limitations associated with the use of
econometric models

### PROGRAMME CONTENT

| Form of classes - lecture | Number of hours |
|---|---|

| Lec 1 | One-way and Multi-way analysis of variation | 2 |
|---|---|---|
| Lec 2 | Gauss-Markov assumption | 2 |
| Lec 3 | Least-square method and model's determination | 2 |
| Lec 4 | Least-square method and model's determination –cont. | 2 |
| Lec 5 | Estimation of explaining variables | 2 |
| Lec 6 | Model parameters' verification and testing | 2 |
| Lec 7 | Real-life examples of applications | 3 |
| | Total hours | 15 |

| Form of classes - class | | Number of hours |
|---|---|---|
| Cl 1 | | |
| Cl 2 | | |
| Cl 3 | | |
| Cl 4 | | |
| .. | | |
| | Total hours | |

| Form of classes - laboratory | | Number of hours |
|---|---|---|
| Lab 1 | | |
| Lab 2 | | |
| Lab 3 | | |
| Lab 4 | | |
| Lab 5 | | |
| … | | |
| | Total hours | |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | Collection of data of chosen economical phenomena, building of econometric model and its verification and validation, forecasting of future values of the phenomena (forecasting) | 15 |
| | Total hours | 15 |

| Form of classes - seminar | | Number of hours |
|---|---|---|
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| … | | |
| | Total hours | |

| TEACHING TOOLS USED |
|---|
| N1. Informative lecture<br>N2. Computer packages<br>N3. Case study |

**EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT**

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P | PEK_W01, PEK_W02 | Project's report |
| P=1 | | |

| PRIMARY AND SECONDARY LITERATURE |
|---|

**PRIMARY LITERATURE:**

[1] Aczel A. D., Sounderpandian J.: Complete Business Statistics, MacGraw-Hill, Irwin, 2009
[2] Mercik J.: BUSINESS STATISTICS. Six Lectures on Statistics, Wroclaw University of Technology Press, Wroclaw, 2011
[3] G. S. Maddala: Introduction to econometrics, John Wiley & Sons, Ltd.

**SECONDARY LITERATURE:**

[1] Any text-book with "econometrics" in its title

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

Prof. Jacek Mercik, jacek.mercik@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR
SUBJECT
**Econometrics**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
Management
AND SPECIALIZATION Business Information Systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01 (knowledge)** | K2_ZARZ_W07, K2_ZARZ_W13 | C1 | Lec1-Lec7 Proj 1 | N1, N2, N3 |
| **PEK_W02** | K2_ZARZ_W07, K2_ZARZ_W13 | C1 | Lec1-Lec7 Proj 1 | N1, N2, N3 |
| **PEK_U01 (skills)** | K2_ZARZ_U03, K2_ZARZ_U08, K2_ZARZ_U11, K2_ZARZ_U12, K2_ZARZ_U14 | C1 | Lec1-Lec7 Proj 1 | N1, N2, N3 |
| **PEK_K01 (competences)** | K2_ZARZ_K04, K2_ZARZ_K09 | C1 | Lec1-Lec7 Proj 1 | N1, N2, N3 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

**Faculty of Computer Science and Management**

### SUBJECT CARD

**Name in Polish Prawo cywilne**
**Name in English Civil law**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems (BIS)**

**Level and form of studies: 1st/ 2nd\* level, full-time / part-time\***
**Kind of subject: obligatory**
**Subject code PRZ1205   PRZ1205Ć**
**Group of courses  NO\***

|  | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | **15** |  |  |  |
| Number of hours of total student workload (CNPS) | **60** | **60** |  |  |  |
| Form of crediting | **the examination** | **Charging for the assessment** |  |  |  |
| For group of courses mark (X) final course |  |  |  |  |  |
| Number of ECTS points | **2** | **2** |  |  |  |
| including number of ECTS points for practical (P) classes |  | **2** |  |  |  |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | **0,5** |  |  |  |

*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Knowledge bases rights

\

### SUBJECT OBJECTIVES

C1   The object is to illustrate the importance of civil law in business and commercial

C2 In the course courses explanation of the grounds of civil law, guided by the study within the scope and the future professional practice graduates

C3 In the course courses in detail the content of the general part on civil law, right in rem, rights obligations, including in particular contract law

## SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W05

he is aware issues of the identification and analysis of problems and management information systems

business and to formulate requirements for systems. He is aware at the very core Computer

management Project

PEK_U02

-It can chosen and applied advanced methods and tools supporting formal decision making processes

relating to social competences:

PEK_K01

– Is aware of the need to develop their professional knowledge and skills in the sciences of the

organization and management. It can on its own develop the knowledge and improve skills

## PROGRAMME CONTENT

| Form of classes - lecture | | Number of hours |
|---|---|---|
| Lec 1 | The concept of civil law. Source of civil law | 1 |
| Lec 2 | Taxonomy basic concepts in the field of civil law | 1 |
| Lec 3 | Actors of civil law-the natural and legal persons. Legal capacity and capacity to act | 1 |
| Lec 4 | Tangible and intangible-conditions legal protection | 1 |
| Lec 5 | Right Commission-invented and judicial protection rights qualities | 1 |
| Lec 6 | General characteristics right in rem | 1 |
| Lec 7 | Economic and legal ownership concept. The content and scope of property rights. The acquisition and loss of property ownership | 1 |
| Lec 8 | The limited rights in rem and their characteristics | 1 |
| Lec 9 | The right to property and its protection | 1 |
| Lec 10 | Commitments-creature, content and subject matter into a contractual relationship | |
| Lec 11 | The legal status creditor and debtor-rules and conditions Legal liability | 1 |
| Lec12 | The contract of sale on the market economic | 1 |
| Lec 13 | Agreement on the use of goods | 1 |
| Lec14 | Agreement on relations credit | 1 |

| | | |
|---|---|---|
| | Total hours | 15 |
| **Form of classes class** | | **Number of hours** |
| Cl1 | General characteristics civil contracts | 2 |
| Cl2 | The types of contracts governed by the code of conduct aviation | 2 |
| Cl3 | Agreements and their special characteristics-modes and forms conclude contracts. Conversion contracts. Performance of the contracts | 2 |
| Cl4 | Responsibility in the course non economic | 2 |
| Cl5 | Agreement on representation | 2 |
| Cl6 | Agreement for the marketing of goods | 2 |
| Cl7 | Agreement in the investment | 2 |
| | Total hours | 15 |
| **Form of classes - laboratory** | | |
| Lab 1 | | |
| Lab 2 | | |
| Lab 3 | | |
| Lab 4 | | |
| Lab 5 | | |
| … | | |
| | Total hours | |
| **Form of classes - project** | | **Number of hours** |
| Proj 1 | | |
| Proj 2 | | |
| Proj 3 | | |
| Proj 4 | | |
| … | | |
| | Total hours | |
| **Form of classes - seminar** | | **Number of hours** |
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| … | | |
| | Total hours | |
| **TEACHING TOOLS USED** | | |

N1. lecture by information
N2. multimedia presentation
N3. lecture by have

# EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P | PEK_W05 | written examination |
| | | |
| | | |

| PRIMARY AND SECONDARY LITERATURE |
|---|
| **PRIMARY LITERATURE:** |
| [1] Frankowski S.,*Introduction to the Polish Law,* Wyd. Kluwer Law International, Warszawa 2005 |
| [2] Kienkowska D. (Ed.), *The Polish Law Collection. Business Law,* Warszawa 2004 |
| [3] Lewandowski P., Angielski od podstaw – Prawo, Wyd. Led, warszawa 2012 |
| [4] Gil I., Marszałkowska-Krześ E., Code of civil procedure, Wyd. Wolters Kluwer Warszawa 2011 |
| [5] *"Handbook of Polish Law",* Wyd. szkolne PWN Warszawa 2011 |
| **SECONDARY LITERATURE:** |
| [1] Kodeks cywilny Civil Code – wydanie dwujęzyczne , Wyd. Wolters Kluwer warszawa 2011 |
| [2] Wolter A. i in., Prawo cywilne, zarys części ogólnej, warszawa 2002 |
| [3] Rossini C., *English as a legal Language,* London 1998 |
| [4] Lewandowski J., Prawo cywilne , Warszawa 2000 |
| **SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)** |
| **Aldona- Małgorzata Dereń** |
| **aldona.deren@pwr.wroc.pl** |

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**… Civil law ……**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALIZATION **Business Information Systems (BIS)**.

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01 (knowledge)** | | | | |
| **PEK_W05** | K2_ZARZ_W12 <br><br> K2_ZARZ_W01 <br><br> K2_ZARZ_W10 | C1 C2 C3 | Lec4 Lec5 lec6 lec7 Lec8 Lec9 Lec 10 Lec11 Lec12 Lec13 Lec14 Lec15 <br><br> Cl1 Cl2 Cl3 Cl4 Cl5 Cl6 Cl7 | N1, N2, N3 <br><br><br><br> N2 |
| **PEK_U01 (skills)** | | | | |
| **PEK_U02** | K2_ZARZ_U20 <br><br> K2_ZARZ_U01 <br><br> K2_ZARZ_U16 <br><br> K2_ZARZ_U05 | C2 C3 | lec5 lec7lec9lec10Lec11lec12 Lec13 lec14 Lec15 <br><br> Cl1Cl2 Cl3 Cl4 Cl5 Cl6Cl7 | N1, N2, N3 <br><br> N2 |
| **PEK_K01 (competences)** | K2_ZARZ_K07 <br><br> K2_ZARZ_K09 | C3 | Lec4 Lec5 Lec9 Lec10 Lec11Lec12 Lec13 Lec14 Lec15 <br><br> Cl1 Cl2 Cl3 Cl4 Cl5 Cl6 Cl7 | N2 |

**Faculty of Computer Science and Management**

**SUBJECT CARD**

**Name in Polish …Prawo handlowe.**
**Name in English Commercial law**
**Main field of study (if applicable): Managament**
**Specialization (if applicable): Business Information Systems (BIS).**
**Level and form of studies: 1st/ 2nd\* level, full-time / part-time\***
**Kind of subject: obligatory**
**Subject code PRZ2203W**

**Group of courses NO\***

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | | | |
| Number of hours of total student workload (CNPS) | **30** | | | | |
| Form of crediting | **Examination / crediting with grade\*** | | | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **1** | | | | |
| including number of ECTS points for practical (P) classes | | | | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | | | | |

\*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Knowledge bases rights

\

C1  The object is to illustrate the importance of commercial law in the field taking up and running a business

C2 In the course is explained by courses and is characterized by organizational forms-legal taking up and pursuit of economic activities, guided by the study within the scope and the future professional practice graduates

C3 In the course courses in detail the content of the legal framework related to the taking up and conduct of business

**SUBJECT OBJECTIVES**

| SUBJECT EDUCATIONAL EFFECTS |
|---|
| relating to knowledge:<br>PEK_W01<br>- he is aware of the methods of analysis and ways knowledge representation. He is aware<br><br>of specialist advanced methods and tools for data collection, analysis and presentation of data.<br><br><br>relating to skills:<br>PEK_U01<br>- it can chosen and applied formal methods as well as intelligent techniques and advanced tools in the analysis and data exploration of business<br><br><br>relating to social competences:<br>PEK_K06<br>is prepared to initiate changes in the workplace and participation in their planning and<br><br>implementation. It can think and act in a red |

| PROGRAMME CONTENT | |
|---|---|
| **Form of classes - lecture** | **Number of hours** |
| Lec 1 | The concept of commercial law-taxonomy sources of commercial law | 2 |
| Lec 2 | Taxonomy basic concepts of the law on freedom of economic activity: concept of economic activities, the concessions regulated activities etc. | 2 |
| Lec 3 | The company-taxonomy types of enterprises and criteria for their awards | 2 |
| Lec 4 | Company law-commercial partnerships and equity in circulation | 2 |
| Lec 5 | General characteristics a limited liability company. The term capital-types in the company capital z o.o. and their importance in activity of the company | 2 |
| Lec.6 | Responsibility to the authorities company for the obligations on the market economic-civil liability, criminal, administrative, tax and fiscal | 2 |
| Lec 7 | Joint Stock Company-rules and conditions formation. Responsibility founders | 2 |
| Lec 8 | Shares-types, rules for the marketing shares. Conditions for acquiring shares | 2 |
| Lec 9 | Taxonomy kinds of securities and their characteristics | 2 |
| Lec 10 | The procedure results and the conditions for its application | 2 |
| Lec 11 | The investigation corrective | 2 |

| | | |
|---|---|---|
| Lec.12 | Right to protect free competition | 2 |
| Lec. 13 | Judicial system operators. Mediation as an instrument economic settlement of disputes | 2 |
| Lec.14 | Basis of the business environment in the European Union | 2 |
| Lec.15 | The terms and conditions of establishment in the area of the European Union | 2 |
| | | |
| | Total hours | 30 |
| | | |
| | | |
| | | |
| | | |
| | Total hours | |

| Form of classes - laboratory | | Number of hours |
|---|---|---|
| Lab 1 | | |
| Lab 2 | | |
| Lab 3 | | |
| Lab 4 | | |
| Lab 5 | | |
| … | | |
| | Total hours | |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | | |
| Proj 2 | | |
| Proj 3 | | |
| Proj 4 | | |
| … | | |
| | Total hours | |

| Form of classes - seminar | | Number of hours |
|---|---|---|
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| … | | |
| | Total hours | |

| TEACHING TOOLS USED |
|---|
| |
| N1. lecture by information |

N2. multimedia presentation

N3. lecture by hale problem

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| | PEK_W01 | written examination |
| | | |
| | | |
| P=1 | | |

## PRIMARY AND SECONDARY LITERATURE

**PRIMARY LITERATURE:**

[1] „The Commercial Companies Code, Wyd. C.H.Beck, Warszawa 2010

[2] Bińkowska M., Niemirska-Fido K., Richard A. Walawader, The Bankruptcy and Reorganistation Law, Wyd. C.H. Beck, Warszawa 2010

[2]Konieczna-Purchała A., Practical english for lawyers, Wyd. C.H. Beck, Warszawa 2009

żga E., The great dictionary of law and economic, Wyd. C.H.Beck, Warszawa 2009

aślan H., Jaślan J.,  Słownik terminologii prawniczej i ekonomicznej angielsko-polski, . C.H. Beck, Warszawa 2009

idyba A., Prawo handlowe, Wyd. C.H.Beck, Warszawa 2011

[6]„Prawo spółek handlowych", t.I i II, Wyd. C.H.Beck, Warszawa 2012

**SECONDARY LITERATURE:**

[1] Prawo handlowe. Teksty ustaw", Wyd. C.H.Beck, Warszawa 2012

[2]Kuraś A. Kuros S., Toczek M., Spółki osobowe. Prawo spółek, Wyd. Difin, Warszawa 2012

[3]Zdanikowski P., Prawo udziałowe w spółce z.o.o., Wyd. Difin, Warszawa 2011

[4]Adamik A., Kształtowanie konkurencyjności i przewagi konkurencyjnej małych i średnich przedsiębiorstw, Wyd.C.H.Beck, Warszawa 2011

[5]Sitkowska K., Stepień T., Problematyka spółek ze szczególnym uwzględnieniem odpowiedzialności cywilnej i karnej, Wyd. Wolters Kluwer, Warszawa 2011

[6]„Prawo handlowe. Zbiór przepisów", Wyd. Wolters Kluwer, Warszawa 20112

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Aldona- Małgorzata Dereń

aldona.deren@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**… Commercial law**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Managament**
AND SPECIALIZATION **Business Information Systems (BIS)**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01 (knowledge)** | K2_ZARZ_W12 K2_ZARZ_W01 K2_ZARZ_W10 K2_ZARZ_W07 | C1 C2 C3 | Lec1 lec2 lec3 lec4 lec5 lec6 lec7 lec8 lec9 lec.10 | N1, N2, N3 |
| | | | | |
| | | | | |
| | | | | |
| **PEK_U01 (skills)** | K2_ZARZ_U20 K2_ZARZ_U01 K2_ZARZ_U16 K2_ZARZ_U05 | C1 C2 C3 | lec7 lec8 lec9 lec.10 | N1, N2, N3 |
| | | | | |
| | | | | |
| **PEK_K06 (competences)** | K2_ZARZ_K07 K2_ZARZ_K09 | C1 C2 C3 | Lec 2 lec4 lec5 lec6 lec7 lec10 lec14 | N1, N2, N3 N2 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

** - enter symbols for main-field-of-study/specialization educational effects
*** - from table above

**Faculty of Computer Science an Management**

**SUBJECT CARD**

**Name in Polish: Psychologia w organizacji**
**Name in English Organizational Psychology**
**Main field of study (if applicable): Management**
**Specialization (if applicable): …Business Information Systems**
**Level and form of studies: 2nd\* level, full-time**
**Kind of subject: obligatory**
**Subject code: PSZ2201W**
**Group of courses  NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **30** | | | | |
| Number of hours of total student workload (CNPS) | **60** | | | | |
| Form of crediting | **crediting with grade** | | | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **2** | | | | |
| including number of ECTS points for practical (P) classes | | | | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **1** | | | | |

\*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Main ideas about psychology as a science.
2.
3.
\

**SUBJECT OBJECTIVES**
C1  Present a picture of people working in organization from the psychological point of view and give the knowledge of the  main  psychological theories and models which can be applied in an organization
C2 Give the knowledge about individual behaviour and teamwork in organization.

**SUBJECT EDUCATIONAL EFFECTS**
relating to knowledge:
PEK_W01 The student has a knowledge about motivation, group dynamic, social influence and leadrship
PEK_W02 The student can identify the main determinants which influence the effective work in organization
…
relating to skills:
PEK_U01
PEK_U02
…
relating to social competences:
PEK_K01

| PEK_K02 | | |
|---|---|---|

| **PROGRAMME CONTENT** | | |
|---|---|---|
| **Form of classes - lecture** | | **Number of hours** |
| Lec 1 | Learning about organizational behaviour – psychological perspective | 2 |
| Lec 2 | Personality and attitudes | 2 |
| Lec 3 | Perception and attribution | 2 |
| Lec 4 | Individual problem-solving styles | 2 |
| Lec 5 | Learning and reinforcement | 2 |
| Lec 6 | Work motivation | 2 |
| Lec 7 | Goal setting | 2 |
| Lec 8 | Work stress | 2 |
| Lec 9 | Dynamics within and between group. | 2 |
| Lec 10 | Influence – Robert Cialdini's approaches to the idea | 2 |
| Lec 11 | Leadership | 2 |
| Lec 12 | Introduction to the theory of conflict | 2 |
| Lec 13 | Negotiation | 2 |
| Lec 14 | Colloquium | 2 |
| Lec 15 | Summary and final discussion | 2 |
| | | 2 |
| | Total hours | 30 |
| **Form of classes - class** | | **Number of hours** |
| Cl 1 | | |
| Cl 2 | | |
| Cl 3 | | |
| Cl 4 | | |
| .. | | |
| | Total hours | |
| **Form of classes - laboratory** | | **Number of hours** |
| Lab 1 | | |
| Lab 2 | | |
| Lab 3 | | |
| Lab 4 | | |
| Lab 5 | | |
| … | | |
| | Total hours | |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | | |
| Proj 2 | | |
| Proj 3 | | |
| Proj 4 | | |
| … | | |
| | Total hours | |
| Form of classes - seminar | | Number of hours |
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| … | | |
| | Total hours | |

## TEACHING TOOLS USED

N1. Lecture
N2. Multimedia presentations
N3. Discussing the problems suggested by students during the lecture

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | | |
| F2 | | |
| F3 | | |
| C – Test | | |

## PRIMARY AND SECONDARY LITERATURE

**PRIMARY LITERATURE:**

[1]  Slocum, J. W., Hellriegel, D., (2010) *Principles of Organizational Behavior*, Boston: South Western Publisher (International Edition)
[2]  Cialdini, R. B., *Influece. Science and Practice* Boston: Allyn and Bacon
[3]

**SECONDARY LITERATURE:**

[1] Hellriegel, D., Slocum, J. W., Woodman, R. W. (1999) *Organizational Behavior*, St Paul & others: West Publishing Company
[2] ] Lewicki, R. J., Saunders, D. M., Barry, B. (2010) *Negotiation. Reading, Exercises and Cases*,  Boston: McGraw-Hill (International Edition)
[3] Cameron, E. & Green, M. (2005) *Making sense of change management* London: Kogan Page

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

wojciech@maluszynski@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Organizational Psychology**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALIZATION …… **Business Information Systems**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01 (knowledge)** | K2_ZARZ_W11, K2-ZARZ_W12 | C1, C2 | Lec. 1 – Lec 13, Lec 15 | N1, N2, N3 |
| **PEK_W02** | K2_ZARZ_W11, K2-ZARZ_W12 | C1, C2 | Lec 1 – Lec 13, Lec 15 | N1, N2, N3 |
| **…** | | | | |
| **…** | | | | |
| **PEK_U01 (skills)** | | | | |
| **PEK_U02** | | | | |
| **…** | | | | |
| **PEK_K01 (competences)** | | | | |
| **PEK_K02** | | | | |
| **…** | | | | |
| | | | | |
| | | | | |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

# FACULTY OF COMPUTER SCIENCE AND MANAGEMENT

## SUBJECT CARD

**Name in English: Process Management**
**Name in Polish:** *Zarządzanie procesowe*
**Main field of study: Management**
**Specialization: Business Information System (BIS)**
**Level and form of studies: 2nd level**
**Kind of subject: obligatory**
**Subject code: ZMZ1201W**
**Group of courses: NO**

|  | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | | | |
| Number of hours of total student workload (CNPS) | **60** | | | | |
| Form of crediting | **Crediting with grade** | | | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **2** | | | | |
| including number of ECTS points for practical (P) classes | | | | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0.5** | | | | |

*delete as applicable

## PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. Basic knowledge of management concepts.
2. Basic knowledge of business and enterprise structures.

\

## SUBJECT OBJECTIVES
C1. The main objective of the course is to familiarize the students with the basic terms and concepts of process management and to present them the knowledge on identification, description, modelling, analysis and evaluation of processes.
C2. The course introduces also students with the concepts, methods and architectures of process management modelling and implementation of models in organisations.
C3. The students are expected to develop skills on process identification and design.

## SUBJECT EDUCATIONAL EFFECTS
*relating to knowledge*:
PEK_W01 - Student knows aims, notations, methods and tools for structuring, modelling and analysis of business processes. Student knows basic approaches for structure and object-oriented modelling in order to analyse organisations and information systems.
PEK_W02 - Student knows fundamentals of management problems identification and analysis with business information systems and also is able to formulate requirements for such systems. Additionally student develops basic knowledge for information systems' implementation projects, especially in BPM area.
*relating to skills*:

| PEK_U01 - | Student is able to use structure and object-oriented methods and techniques for identification and analysis of business processes in order to specify and design structure and information systems for process-oriented management. |
|---|---|

*relating to social competences*:

| PEK_K01 - | Student is prepared to initiate changes in organisations and to participate in planning and implementation, particularly as regard process management approaches. Student is able to predict multi-aspect effects of changes being introduced in organisations and is able to think and act in an entrepreneur way. |
|---|---|

## PROGRAMME CONTENT

| Form of classes – lecture | | Number of hours |
|---|---|---|
| Lec 1 | Introductory lecture. Definition of business process. Types of business processes. Functional orientation versus process orientation in management. Evolution of the process management approaches in a history of management. | 2 |
| Lec 2 | Idea of process orientation in management. Reasons and aims of process management implementation on organizations. Characteristic features of processes in process oriented organizations. Models of process management. | 2 |
| Lec 3 | Planning the process management implementation. The techniques used to processes design. | 2 |
| Lec 4 | Measurement and evaluation of processes. Reasons of measuring processes. Selecting a set of process measures. Process monitoring methods and process evaluations methods. | 2 |
| Lec 5 | Implementing the process management in total quality management organizations. | 2 |
| Lec 6 | The idea of Business Process Reengineering (BPR). | 2 |
| Lec 7 | Applying the ideas of lean management, benchmarking and outsourcing in process oriented organizations. | 2 |
| Lec 8 | Test. | 1 |
| | Total hours | 15 |

| Form of classes – class | | Number of hours |
|---|---|---|
| Cl 1 | | |
| | | |
| | Total hours | |

| Form of classes - laboratory | | Number of hours |
|---|---|---|
| Lab 1 | | |
| … | | |
| | Total hours | |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | | |
| … | | |
| | Total hours | |

| Form of classes – seminar | | Number of hours |
|---|---|---|

| Sem 1 | | |
|---|---|---|
| … | | |
| | Total hours | |

## TEACHING TOOLS USED

N1. Lecturing with multimedia - computer presentation.
N2. Case studies.
N3. Discussions and comparative study.

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| **Evaluation** (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P | PEK_W01, PEK_W02, PEK_U01 | Final test |

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[1] Pietroń, R., *Process management*, Wrocław Univ. of Technolgy, PRINTPAP Łódź 2011.

### SECONDARY LITERATURE:

[1] Bitkowska A., *Zarządzanie procesami biznesowymi w przedsiębiorstwie*, VIZJA PRESS & IT, Warszawa.2009 (*in Polish*).

[2] Grajewski P., *Organizacja procesowa*, PWE, Warszawa 2007 (*in Polish*).

[3] Hammer M., Champy J., *Reengineering the Corporation. A Manifesto for Business Revolution*. Jossey-Bass Inc.,Publisher. 1993.

[4] Hammer M., *Beyond Reengineering. How the Process-Centered Organization is Changing our Work and our Lives.* HarperCollins Publishers, Inc., New York 1996.

[5] Jacka, J. M., *Business process mapping: improving customer satisfaction*, New York, John Wiley & Sons.2002.

[6] Kaplan R., S., Norton D.P., *The Balanced Scorecard. Translating Strategy into Action*, Harvard Bus. School Press 1996.

[7] Kasprzak T., (red.), *Modele referencyjne w zarządzaniu procesami biznesu*, Wyd. Difin, Warszawa 2005 (*in Polish*).

[8] Pacholski L., Cempel W., Pawlewski P., *Reengineering. Reformowanie procesów biznesowych i produkcyjnych w przedsiębiorstwie*, Wyd. Polit. Poznań 2009 (*in Polish*).

[9] Rummler G.A., Brache A.P., *Improving performance. How to manage the white Space on the Organization Char*t. Jossey-Bass Inc.,Publisher, 1995.

[10] Scheer A.-W., *ARIS - business process modeling*, Springer-Verlag, Berlin, 2000.

[11] Van der Aalst W., et al. (eds), *Business process management: models, techniques, …,* Springer, Berlin, 2002.

[12] Selected papers from: professional journals: *Business Process Management Journal*, *Journal of Operations and Production Management*", *Journal of Quality and Reliability Management*", *The TQM Magazine*, *Quality Progress*.

[13] Scheer A.-W., *et al.* (eds), *Business process excellence: ARIS in 2002 practice,* Springer-Verlag, 2002.

[14] Weske, M., *Business process management:concepts, languages, architectures*. Springer, Berlin 2007.

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Roman Pietroń, roman.pietron@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Process Management**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALISATION **Business Information Systems (BIS)**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01 (knowledge)** | K2_Zarz_W04 S2_BIS_W04 S2_BIS_W05 | C1, C2, C3 | Lec 1, Lec 2, Lec 3, Lec 4, Lec 5, Lec 6, Lec 7 | N1, N2, N3 |
| **PEK_W02** | K2_Zarz_W06 K2_Zarz_W07 K2_Zarz_W14 | C1, C2, C3 | Lec 1, Lec 2, Lec 3, Lec 4, Lec 5, Lec 6, Lec 7 | N1, N2, N3 |
| **PEK_U01 (skills)** | S2_BIS_U04 K2_Zarz_U15 K2_Zarz_U16 | C1, C2, C3 | Lec 1, Lec 2, Lec 3, Lec 4, Lec 5, Lec 6, Lec 7 | N1, N2, N3 |
| **PEK_K01 (competences)** | K2_Zarz_K05 K2_Zarz_K06 | C1, C2, C3 | Lec 1, Lec 2, Lec 3, Lec 4, Lec 5, Lec 6, Lec 7 | N1, N2, N3 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

FACULTY of **Computer Science and Management** / DEPARTMENT **Management**

## SUBJECT CARD

**Name in Polish Logistyka**
**Name in English Logistics**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code ZMZ1202W**
**Group of courses NO**

|  | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** |  |  |  |  |
| Number of hours of total student workload (CNPS) | **60** |  |  |  |  |
| Form of crediting | **crediting with grade** |  |  |  |  |
| For group of courses mark (X) final course |  |  |  |  |  |
| Number of ECTS points | **2** |  |  |  |  |
| including number of ECTS points for practical (P) classes |  |  |  |  |  |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** |  |  |  |  |

---

### PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. Basic knowledge of management

\

### SUBJECT OBJECTIVES
C1 Getting by the students basic knowledge about the area of logistics in business organizations.
C2 Understanding the issues that are related to the area of logistics, including contemporary issues such as Just in Time, resource planning and electronic procurement.
C3 Ability of analysis, measurement and monitoring of supply chain.

### SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:
PEK_W01 has structured knowledge of the supply chain and incorporates recent developments in logistics management
PEK_W02 is aware of the importance of logistics processes in performance of business organizations

relating to skills:
PEK_U01 has the ability to identify the factors influencing the supply chain
PEK_U02 has the ability to carry out economical calculations, which are the base to assessing the cost-effectiveness of the solutions used in the supply chain

relating to social competences:
PEK_K01 properly identify and resolve dilemmas related to the logistics profession

| Form of classes - lecture | Number of hours |
|---|---|
| Lec 1 Definitions and Concepts of Logistics | 2 |
| Lec 2 Logistics customer service | 4 |
| Lec 3 Supply chain management (theoretical basis) | 4 |
| Lec 4 Supply chain strategies and analysis | 4 |
| Lec 5 Test | 1 |
| - | |
| Total hours | 15 |

| Form of classes - class | | Number of hours |
|---|---|---|
| Cl 1 | | |
| Cl 2 | | |
| Cl 3 | | |
| Cl 4 | | |
| .. | | |
| | Total hours | |

| Form of classes - laboratory | | Number of hours |
|---|---|---|
| Lab 1 | | |
| Lab 2 | | |
| Lab 3 | | |
| Lab 4 | | |
| Lab 5 | | |
| … | | |
| | Total hours | |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | | |
| Proj 2 | | |
| Proj 3 | | |
| Proj 4 | | |
| … | | |
| | Total hours | |

| Form of classes - seminar | | Number of hours |
|---|---|---|
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |

| … | | |
|---|---|---|
| | Total hours | |

## TEACHING TOOLS USED

N1. informative lecture
N2. multimedia presentation
N3. case studies

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| **P1** | PEK_W01 | test |
| P2 | | |
| P3 | | |
| **P=1** | | |

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[1] Quayle M., Jones  B., Logistics: an Integrated Approach, Liverpool Business Publishing, 2002
[2] Grzybowska K., Golińska P. (eds.), Selected logistics problems and solutions: monograph, Publishing House of Poznan University of Technology, 2011
[3] Fertsch M., Grzybowska K. (eds.), Logistics in the enterprises - selected aspects: monograph, Publishing House of Poznan University of Technology, 2010

### SECONDARY LITERATURE:

[1] Coyle J.J., Bardi E. J., Langley C.J.,( red.) Danuta Kempny, Zarządzanie logistyczne, Warszawa, Polskie Wydawnictwo Ekonomiczne, 2010

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Dorota Kuchta, dorota.kuchta@pwr.wroc.pl

# MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
## Logistics
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALIZATION **Business Information Systems**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01 (knowledge)** | S2_BIS_W02 | C1, C2, C3 | Lec1, Lec2, Lec3, Lec4 | N1, N2, N3 |
| **PEK_W02** | S2_BIS_W02 | C1, C2, C3 | Lec1, Lec2, Lec3, Lec4 | N1, N2, N3 |
| **-** | | | | |
| **-** | | | | |
| **PEK_U01 (skills)** | | C1, C3 | Lec1, Lec3, Lec4 | N1, N2, N3 |
| **PEK_U02** | | C2, C3 | Lec1, Lec3, Lec4 | N1, N2, N3 |
| **-** | | | | |
| **PEK_K01 (competences)** | K2_ZARZ_K04 K2_ZARZ_K06 | C1, C2, C3 | Lec1, Lec2, Lec3, Lec4 | N1, N2, N3 |
| **-** | | | | |
| **-** | | | | |
| | | | | |
| | | | | |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

| FACULTY of Computer Science and Management | | | | | |
|---|---|---|---|---|---|

**SUBJECT CARD**

**Name in Polish Koncepcje zarządzania**
**Name in English Contemporary Management**
**Main field of study (if applicable):** Management
**Specialization (if applicable): Business Information systems**
**Level and form of studies:** 2nd level, full-time
**Kind of subject:** obligatory
**Subject code ZMZ1228**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **30** | **15** | - | - | - |
| Number of hours of total student workload (CNPS) | **120** | **60** | - | - | - |
| Form of crediting | **exam** | **credit with a grade** | - | - | - |
| For group of courses mark (X) final course | **-** | **-** | - | - | - |
| Number of ECTS points | **4** | **2** | - | - | - |
| including number of ECTS points for practical (P) classes | **-** | **2** | - | - | - |
| including number of ECTS points for direct teacher-student contact (BK) classes | **1** | **0,5** | - | - | - |

\*delete as applicable

| **PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES** |
|---|
| - |

| **SUBJECT OBJECTIVES** |
|---|

To ensure fundamental knowledge (including application aspects) about:
C1. schools and approaches in the organization and management theory,
C2. management methods and concepts,
C3. organizational effectiveness,
C4. complex, dynamic, unpredictable and global environment of contemporary organizations.
To ensure fundamental skills to:
C5. choose, justify and apply the management methods and techniques when complex management and substantive issues in the organization are identified, analyzed and solved

| **SUBJECT EDUCATIONAL EFFECTS** |
|---|

**Relating to knowledge:**
PEK_W01 - has a basic knowledge about schools and approaches in the organization and management theory
PEK_W02 - has expanded knowledge about management methods and concepts
PEK_W03 - identifies key management issues
PEK_W04 – understands the organizational efficiency concept
PEK_W05 – has expanded knowledge about organizational environment
**Relating to skills:**
PEK_U01 –can (at basic level) choose, justify and apply the methods and techniques to identify, analyze and solve complex management and substantive issues in the organization

**Relating to social competences:**

PEK_K01 - is aware of the need to develop knowledge and skills in the science of organization and management

PEK_K02 - is aware that manager's job is to continuously identify, analyze and resolve issues in organizations

PEK_K03 - is prepared to express and defend his/her views, and to persuade others to his/her views

PEK_K04 - is prepared to be independent and flexible in finding and selecting methods and techniques for dealing with management and substantive issues

| PROGRAMME CONTENT | | |
|---|---|---|
| **Form of classes - lecture** | | **Number of hours** |
| Lec1-2 | Classical management concepts: scientific management approach, general administrative theory, behavioral approach, systems theory, contingency approach, New Wave theory, postmodernism in management | 4 |
| Lec3 | Challenges for Management in a Global Environment | 2 |
| Lec4 | Change, Adaptability and Resiliency - Organizing for a Complex and Dynamic World | 2 |
| Lec5 | Managing and Leading Today. Contemporary management concepts and methods | 2 |
| Lec6 | Lean Management | |
| Lec7 | Outsourcing | 4 |
| Lec8 | Business Process Reengineering | 2 |
| Lec9 | Time Based Management | 2 |
| Lec10 | Benchmarking | |
| Lec11 | Learning Organization | 4 |
| Lec12 | Knowledge Management | 2 |
| Lec13 | Network Organization. | 2 |
| Lec14 | Virtual organization. Working in a Virtual Word | 2 |
| Lec15 | Process Management | 2 |
| | **Total hours** | **30** |
| **Form of classes - class** | | **Number of hours** |
| Cl 1 | Introduction to management concepts | 1 |
| Cl 2-3 | Classical management concepts today – case studies | 4 |
| Cl 4 | Lean-oriented concepts – case studies | 2 |
| Cl 5 | Change-oriented concepts – case studies | |
| Cl 6 | Knowledge-oriented concepts – case studies | 2 |
| Cl 7 | Concepts oriented towards inter-organizational cooperation – case studies | 2 |
| Cl 8 | Market-oriented and quality-oriented concepts – case studies | 2 |
| | **Total hours** | **15** |
| TEACHING TOOLS USED | | |

N1. Traditional lecture with multimedia presentations
N2. Questions to students during lecture

N3. Case studies presented during lecture
N4. Discussion of selected issues
N5. Case studies solving (independently by student or jointly with other students)
N6. Self-study: classes preparation and final assessment preparation
N7. Presentations prepared by students

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), C – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| C1 | PEK_U01 PEK_K01-4 | Scoring students' involvement and presentations during classes |
| C2 | PEK_W01-5 | Exam |

## PRIMARY AND SECONDARY LITERATURE

**PRIMARY LITERATURE:**

[1]   Robbins S.P., DeCenzo D.: Fundamentals of management: essential concepts and applications, Pearson/Prentice Hall, 2008.
[2]   Robbins S.P., Barnwell N.: Organization Theory, Person, 2006.

**SECONDARY LITERATURE:**

[1]   Błaszczyk W., Metody organizacji i zarządzania, Wydawnictwo Naukowe PWN, Warszawa 2005
[2]   Brilman J., Nowoczesne koncepcje i metody zarządzania, PWE, Warszawa 2002.
[3]   Brzozowski M., Kopczyński T., Metody zarządzania, Wydawnictwo UE w Poznaniu, Poznań 2009.
[4]   Czekaj J., Metody organizacji i zarządzania, Wydawnictwo AE w Krakowie, Kraków 2007.
[5]   Easterby-Smith M., Thorpe R., Jackson P.R.: Management research, SAGE Publications, Los Angeles 2008.
[6]   Griffin R.W.: Management, Houghton Mifflin Company, New York 2008.
[7]   Hopej M., Struktury organizacyjne, Ossolineum, Wrocław – Warszawa - Kraków 2004.
[8]   Jones G.R., George J.M., Essentials of contemporary management, McGraw-Hill Irwin, Boston 2007 (2006).
[9]   Koźmiński A.K.: Management in transition, Difin, Warsaw 2008.
[10]  Koźmiński A.K., Piotrowski W. (red.), Zarządzanie. Teoria i praktyka, Wydawnictwo Naukowe PWN, Warszawa 2006
[11]  McKee A.: Management: a focus on leaders, Pearson , Boston 2012.
[12]  Messick D.M., Kramer R.M.: The psychology of leadership: new perspectives and research, Lawrence Erlbaum Associates, London 2005.
[13]  Robbins S.P., Coulter M.: Management, Pearson/Prentice Hall, 2009.
[14]  Zimniewicz K., Współczesne koncepcje i metody zarządzania, PWE, Warszawa 1999.

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Anna Zgrzywa-Ziemak, anna.zgrzywa-ziemak@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Contemporary Management**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
**Management**
AND SPECIALIZATION **BIS**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01** | K2_ZARZ_W04, K2_ZARZ_W05, K2_ZARZ_W08, K2_ZARZ_W10-11 | C1 | Lec 1-2 | N1-4, N6 |
| **PEK_W02** | K2_ZARZ_W04, K2_ZARZ_W05, K2_ZARZ_W08, K2_ZARZ_W10-11 | C2 | Lec1-2, Lec6-15 | N1-4, N6 |
| **PEK_W03** | K2_ZARZ_W06, K2_ZARZ_W09 | C1-4 | Lec1-15 | N1-4, N6 |
| **PEK_W04** | K2_ZARZ_W07 | C3 | Lec 1-2, Lec6-15 | N1-4, N6 |
| **PEK_W05** | K2_ZARZ_W03 | C4 | Lec3-4 | N1-4, N6 |
| **PEK_U01** | K2_ZARZ_U02, K2_ZARZ_U03, K2_ZARZ_U04, K2_ZARZ_U06-9, K2_ZARZ_U15-18 | C2, C6 | Cl1-8 | N4-7 |
| **PEK_K01** | K2_ZARZ_K01 | C1-4 | Lec 1-15, Cl1-8 | N4-7 |
| **PEK_K02** | K2_ZARZ_K02, K2_ZARZ_K04, K2_ZARZ_K06, K2_ZARZ_K07 | C1-4 | Lec 1-15, Cl1-8 | N4-7 |
| **PEK_K03** | K2_ZARZ_K08 | C5-7 | Lec 1-15, Cl1-8 | N4-7 |
| **PEK_K04** | K2_ZARZ_K05 | C5-7 | Lec 1-15, Cl1-8 | N4-7 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

**FACULTY OF COMPUTER SCIENCE AND MANAGEMENT**

**SUBJECT CARD**

**Name in Polish** Etyka w zarządzaniu
**Name in English Management Ethics**
**Main field of study (if applicable):** Management
**Specialization (if applicable): Business Information systems**
**Level and form of studies:** 2nd level, full-time
**Kind of subject:** obligatory
**Subject code** ZMZ2201
**Group of courses** NO

|  | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **30** | - | - | - | - |
| Number of hours of total student workload (CNPS) | **90** | - | - | - | - |
| Form of crediting | **credit with an exam** | - | - | - | - |
| For group of courses mark (X) final course | **-** | - | - | - | - |
| Number of ECTS points | **3** | - | - | - | - |
| including number of ECTS points for practical (P) classes | **-** | - | - | - | - |
| including number of ECTS points for direct teacher-student contact (BK) classes | **1** | - | - | - | - |

*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
-

**SUBJECT OBJECTIVES**

C1. To deliver the basic conceptual foundations of business ethic theory.
C2. To explore the ethical issues and challenges typically encountered by the corporations in dealing with different stakeholder groups.
C3. To deliver the basic knowledge (including application aspects) how to manage ethics through specific tools, techniques practices and processes.
C3. To encourage making thoughtful judgments when faced with ethical complexity in business practice.

**SUBJECT EDUCATIONAL EFFECTS**

**Relating to knowledge:**

PEK_W01 - reasons ethically by drawing on four major theories of ethics: utilitarianism, Kantian ethics, theories of justice, and an ethic of care
PEK_W02 - understands the ethical concepts of happiness, rights, justice, and caring
PEK_W03 - illustrates ethical issues and challenges typically encountered by the corporations in dealing with different stakeholder groups
PEK_W04 - knows specific tools, techniques and processes of managing ethics

**Relating to social competences:**
PEK_K01 – is prepared to behave in a professional and ethical manner, to recognize and formulate the ethical dilemmas associated with his/her own and others' work; to seek appropriate solutions and opportunities to correct deficiencies in their attitudes and behaviors in the workplace

| PROGRAMME CONTENT | | |
|---|---|---|
| **Form of classes - lecture** | | **Number of hours** |
| Lec 1 | Introduction to business ethics. Framing business ethics | 2 |
| Lec 2-3 | Evaluating business ethics. Making decisions in business ethics | 4 |
| Lec 4-5 | Employees and business ethics | 4 |
| Lec 6-7 | Consumers and business ethics | 4 |
| Lec 8 | Shareholders and business ethics | 2 |
| Lec 9 | Suppliers and competitors, and business ethics | 2 |
| Lec 10 | Finance and business ethics | 2 |
| Lec 11 | Civil society and business ethics | 2 |
| Lec 12 | Government, regulation and business ethics | 2 |
| Lec 13 | Cross-cultural differences and ethics | 2 |
| Lec 14 | Managing business ethics. Codes of ethics. | 2 |
| Lec 15 | Final assessment | 2 |
| | **Total hours** | **30** |
| TEACHING TOOLS USED | | |

N1. Traditional lecture with multimedia presentations
N2. Case studies
N3. Discussion of selected issues
N4. Self-study: final assessment preparation

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), C – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_W01-4, PEK_K01 | scoring students' involvement during lecture |
| F2 | PEK_W01-4, PEK_K01 | written assessment |
| C = F1 (up to 10%) + F2 | | |

## PRIMARY AND SECONDARY LITERATURE

**PRIMARY LITERATURE:**

[1]  Crane A., Dirk M.: Business ethics, Oxford University Press, New York 2007.
[2]  Chrysides G.D., Kaler J.H.: Essentials of business ethics, McGrawhill, 1996.
[3]  Sternberg E.: Just Business, Oxford University Press, New York 2002.

**SECONDARY LITERATURE:**

[1]  Budgol M.: Gry i zachowania nieetyczne w organizacji, Difin, Warszawa 2007.
[2]  Bourke V. J.: Historia etyki, przeł. A. Białek, Toruń, Krupski i S-ka, 1994.
[3]  Ferrell O. C., Business ethics: ethical decision making and cases, Houghton Mifflin Co., New York 2005.
[4]  Gini A. [ed.]: Case studies in business ethics, Pearson Pretice Hall, Upper Saddle River 2005.
[5]  Giacalone R.A., Jurkiewicz C.L., Dunn C. [ed.]: Positive psychology in business ethics and corporate responsibility, Information Age Pub., Greenwich 2005.
[6]  MacIntyre A.: Krótka historia etyki, Warszawa, PWN, 1995.
[7]  Murphy P.E., Laczniak G.R.: Marketing ethics : cases and readings, Pearson Prentice Hall, Upper Saddle River 2006.
[8]  Pratley P.: Etyka w biznesie, Gebethner i Ska, Warszawa 1998.
[9]  Singer P.: Przewodnik po etyce, Warszawa, Książka i Wiedza, 2002.
[10] Styczeń T.: Wprowadzenie do etyki, Lublin, 1995.
[11] Klimczak B.: Etyka gospodarcza, Wyd. AE im. Oskara Langego we Wrocławiu, Wrocław 2006.
[12] Rybak M.: Etyka menedżera: społeczna odpowiedzialność przedsiębiorstwa, PWN, Warszawa 2004.
[13] Sójka J. [red.]: Etyka biznesu po „Enronie", Wyd. Fundacji Humaniora, Poznań 2005.
[14] Tatarkiewicz W.: Historia filozofii, t.1-3, PWN, Warszawa 2005.

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Anna Zgrzywa-Ziemak, anna.zgrzywa-ziemak@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Management Ethics**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
**Management**
AND SPECIALIZATION **Business Information systems**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable) | Subject objectives | Programme content | Teaching tool number |
|---|---|---|---|---|
| PEK_W01 | K2_ZARZ_U05, K2_ZARZ_W01, K2_ZARZ_W04, K2_ZARZ_W11, K2_ZARZ_U02, K2_ZARZ_U06, K2_ZARZ_K03 | C1 | Lec1-3 | N1-4 |
| PEK_W02 | K2_ZARZ_W01, K2_ZARZ_W04, K2_ZARZ_W11, K2_ZARZ_U02, K2_ZARZ_U06, K2_ZARZ_K03 | C1 | Lec1-3 | N1-4 |
| PEK_W03 | K2_ZARZ_W01, K2_ZARZ_W04, K2_ZARZ_W11, K2_ZARZ_U02, K2_ZARZ_K03 | C2-3 | Lec4-12 | N1-4 |
| PEK_W04 | K2_ZARZ_W08, K2_ZARZ_W01, K2_ZARZ_W04, K2_ZARZ_W11, K2_ZARZ_U02, K2_ZARZ_K03 | C1,3 | Lec1-14 | N1-4 |
| PEK_K01 | K2_ZARZ_K09, K2_ZARZ_K04, K2_ZARZ_K05, K2_ZARZ_K07 | C1-C4 | Lec1-14 | N1-4 |

**Faculty of Computer Science and Management**

**SUBJECT CARD**

**Name in Polish Zarządzanie Strategiczne**
**Name in English Strategic Management**
**Main field of study (if applicable): Business Information Systems**
**Specialization (if applicable):**
**Level and form of studies: 2nd\* level, full-time**
**Kind of subject: obligatory**
**Subject code ZMZ2204**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | | | **15** |
| Number of hours of total student workload (CNPS) | **90** | | | | **90** |
| Form of crediting | **crediting with grade** | | | | **crediting with grade** |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **3** | | | | **3** |
| including number of ECTS points for practical (P) classes | | | | | **3** |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | | | | **0,5** |

\*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1.

\

**SUBJECT OBJECTIVES**

C1 The course discusses in general the essentials of strategic elements. Other elements of the course are instruments and methods, which can be used for strategic analyse

C2 The students will cover the main idea of strategic management. They should obtain the ability to use methodology and concepts of strategy procedure.

**SUBJECT EDUCATIONAL EFFECTS**

Relating to knowledge:
PEK_W01 Students know the idea of strategic management
PEK_W02 Knowledge about variety of strategies
PEK_W03 Familiarity with instruments (concepts, methods, models) of estimation a strategy

Relating to skills:
PEK_U01 Student is able to seek and interpret knowledge of strategic management

Relating to social competences:
PEK_K01Acquire a enthusiastic approach for business activity

| **Form of classes - lecture** | | **Number of Hours** |
|---|---|---|
| Lec 1 | Genesis and definitions of a strategy | 3 |
| Lec 2 | Mission statements - , definitions and functions | 2 |
| Lec 3 | Strategic analyze - environment | 2 |
| Lec 4 | Internal environment analyze | 2 |
| Lec 5 | Strategic options at the strategic business units  (SBU) level | 2 |
| Lec 6 | Strategic choice models | 2 |
| Lec 7 | Strategy implementation | 2 |
| | Total hours | 15 |

| **Form of classes - seminar** | | **Number of hours** |
|---|---|---|
| Sem 1 | Genesis of strategic management. | 1 |
| Sem 2 | Models of strategy | 2 |
| Sem 3 | Strategic management – main schools | 2 |
| Sem 4 | Business concept – mission statement | 2 |
| Sem 5 | Enterprise environment | 2 |
| Sem 6 | Review of management concepts (strategic alliances, benchmarking, creativity and innovations) | 3 |
| Sem 7 | Balanced score card | 2 |
| Sem 8 | Strategy implementation | 2 |
| | Total hours | 15 |

## TEACHING TOOLS USED

 N1. Informational lecture
N2. Multimedia presentations
N3. Detailed lecture

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|

| end) | | |
|---|---|---|
| P | K2_ZARZ_W03<br>K2_ZARZ_W07 | Written test |
| P | K2_ZARZ_U02<br>K2_ZARZ_U03 | Seminar performance |

| PRIMARY AND SECONDARY LITERATURE |
|---|

**PRIMARY LITERATURE:**

[1] Świda A, Strategic Management, Wroclaw University of Technology, Wrocław 2011

**SECONDARY LITERATURE:**

[1] Porth S., J., Strategic Management – a cross-functional approach, Prentice Hall 2003

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

**Adam Świda, e-mail  -   adam.swida@pwr.wroc.pl**

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR
SUBJECT
**Strategic Management**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
Management
AND SPECIALIZATION Business Information Systems

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **Knowledge** | | | | |
| PEK_W01 | K2_ZARZ_W03 K2_ZARZ_U09 K2-ZARZ-U03 | C1, C2, C3 | Wy1, Wy2, Wy3,. | N1, N2, N3 |
| PEK_W02 | K2_ZARZ_W05 K2_ZARZ_W03 K2_ZARZ_U09 | C2, C3 | Wy4, Wy5 | N1, N2, N3 |
| PEK_W03 | K2_ZARZ_U08 K2_ZARZ_U04 | C1, C3 | Wy 4, Wy5, Wy6, Wy7 | N1, N2, N3 |
| **Skills** | | | | |
| PEK_U01 | K2_ZARZ_U06 K2_ZARZ_U03 K2_ZARZ_U18 | C2, C3 | Se1, Se2,, Se3, Se4, Se5, Se7, Se8 | N1, N2, N3 |
| **Competences** | | | | |
| PEK_K01 | K2_ZARZ_U02 K2_ZARZ_K06 K2_ZARZ_K02 | C1, C2, C3 | Wy1, Wy2, Wy3, Wy4, Se2, Se3, Se4, Se5, Se6, Se7, Se8 | N1, N2, N3 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

**FACULTY OF INFORMATICS AND MANAGEMENT**

**SUBJECT CARD**

**Name in Polish** Makroekonomia
**Name in English MACROECONOMICS**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business information systems (BIS)**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code EKZ1206**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of classes organized by the University (ZZU) | **15** | **15** | | | |
| The total number of hours of student workload (CNPS) | **90** | **60** | | | |
| Form of crediting | **Examination** | **credit with a grade** | | | |
| For a group of courses final course mark (X) | | | | | |
| Number of points ECTS | **3** | **2** | | | |
| including the number of points corresponding to the classes of practical (P) | | **2** | | | |
| in the number of ECTS credits corresponding to the classes requiring direct contact (BK) | **1,5** | **0,5** | | | |

*niepotrzebne skreślić

PREREQUISITES FOR KNOWLEDGE, SKILLS AND OTHER POWERS
1. A course in microeconomics

COURSE OBJECTIVES
C1 Knowledge and understanding of the theory of macroeconomic management, including in terms of the different schools of economics.
C2 Education the ability to understand the correctness of macroeconomic management in the context of economic growth and development.
C3 Education skills identification and analysis of macroeconomic factors in the dimension of content and control in conjunction with the implemented economic policy

## SUBJECT LEARNING OUTCOMES

The scope of knowledge:

PEK_W01 He has knowledge of the place of economics in the sciences, and of the substantive and methodological links with other scientific disciplines. It is characterized by the main theories of economics.

PEK_W02 He knows the circumstances and depending on macroeconomic growth and development of the national economy and the world. Knows the basic economic tools and regulations on the national economy, the economies of integration groups globally.

The range of skills:

PEK_U01 Understands and is able to use theoretical knowledge in economics and related disciplines to analyze and interpret problems in macroeconomic management.

PEK_U02 It has the ability to identify, understand and analyze the macroeconomic factors in the context of the policy as part of macroeconomic and business environment.

The scope of social competence:

PEK_K01 Can discuss possible solutions to the practical functioning of the economy at the macroeconomic level, to justify the view presented by analyzing the benefits and risks of particular solutions.

| Course content | | |
|---|---|---|
| **Type of course - lecture** | | **Number of hours** |
| 1 | Modern economic school of macroeconomics, neoclassical school, mainstream Keynesian, monetarist, supply economics, current institutional. | 2 |
| 2 | The role of the state in a market economy | 1 |
| 3 | Two paradigms in macroeconomics. Model of aggregate demand and aggregate supply | 2 |
| 4 | Development and economic growth. Measurement of economic growth and development | 1 |
| 5 | Fluctuations in the market economy. counter-cyclical policy | 2 |
| 6 | The monetary - credit | 2 |
| 7 | State budget fiscal policy | 1 |
| 8 | Unemployment | 1 |
| 9 | Inflation | 1 |
| 10 | International Trade | 1 |
| 11 | Balance of payments and exchange rates | 1 |
| | Total hours | **15** |

| **Type of course - classes** | | **Number of hours** |
|---|---|---|
| 1 | The concept and the basic problems of macroeconomics | 2 |
| 2 | Creation and distribution of national income and its calculation | 2 |
| 3 | Cycle. counter-cyclical policy | 2 |
| 4 | The monetary - credit. The essence, the policy tools | 2 |
| 5 | Budget - fiscal policy | 2 |

| 6 | Inflation and unemployment | 2 |
|---|---|---|
| 7 | International trade. Balance of payments. exchange rates | 2 |
| 8 | Final test | 1 |
| | Total hours | **15** |

| Type of course - laboratory | Number of hours |
|---|---|
| La1 | |
| La2 | |
| La3 | |
| La4 | |
| La5 | |
| … | |
| Total hours | |

| Type of course - project | Number of hours |
|---|---|
| Pr1 | |
| Pr2 | |
| Pr3 | |
| Pr4 | |
| … | |
| Total hours | |

| Type of course - seminar | Number of hours |
|---|---|
| Se1 | |
| Se2 | |
| Se3 | |
| … | |
| Total hours | |

| TOOLS FOR TEACHING |
|---|
| Lecture<br>N1. Lecture information<br>N2. Multimedia presentation<br>N3. Lecture problem<br><br>Classes<br>N4. Solving practical<br>N5. Discussion |

## EVALUATION OF THE EFFECTS OF EDUCATION ACHIEVEMENTS

| Ratings (F - forming (during the semester), P - Summary (at the end of the semester) | Number of training effect | Way to evaluate the effect of education achievement |
|---|---|---|
| F1 | PEK W02 | Test |
| F2 | PEK U01<br>PEK U02 | Practical exercises test |
| F3 | PEK K01 | Participation in the discussion |

| F4 | PEK W01 | The examination in the form of test |
|---|---|---|
|  | PEK W02 |  |
|  | PEK U01 |  |

P (lecture) = F4
P (classes) = 0,8*F1+0,1*F2+0,1*F3

## BASIC AND ADDITIONAL READING

**BASIC READING:**

[1] D. Begg, S. Fischer, R. Dornsbuch*, Makroekonomia*, t.2, PWE, Warszawa 2007.
[2] R. Milewski (red.), *Podstawy ekonomii*, PWN, Warszawa 2001 i kolejne wydania.
[3] E.Skawińska, K. Sobiech, K. Nawrot, *Makroekonomia*, PWE, Warszawa 2008.
[4] E.Skawińska, K. Sobiech, K. Nawrot, *Makroekonomia*, PWE, Warszawa 2008.

**ADDITIONAL READING:**

[1] Z. Bombera, H. Szczepiński, J. Telep (red.) *Państwo i rynek w gospodarce europejskiej*, Wyd. Almamer, Warszawa 2008.
[2] E. Frejtag – Mika, *Teoria i praktyka ekonomii a konkurencyjność gospodarowania*, Wyd. Difin, Warszawa 2006.
[3] S. Swadźba, *Systemy gospodarcze i ich ewolucja*, Wyd. AE w Katowicach, Katowice 2008.
[4] R. Milewski (red.), *Podstawy ekonomii. Ćwiczenia, zadania, problemy*, PWN, Warszawa 2002 i kolejne wydania.

**COURSE SUPERVISOR (NAME, ADDRESS E-MAIL)**

**Małgorzata Rutkowska-Podołowska,**
**malgorzata.rutkowska-podolowska@pwr.wroc.pl**

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**MACROECONOMICS**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **MANAGEMENT**
AND SPECIALIZATION Business information systems **Business Information systems**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01** (knowledge) | K2_ZARZ_W01<br>K2_Zarz_W02 | C1 | Wy1÷Wy11 | N1, N2, N3 |
| **PEK_W02** | K2_ZARZ_W02<br>K2_ZARZ_W03 | C2, C3 | Wy1÷Wy11 | N1, N2, N3, |
| **PEK_U01** (knowledge) | K2_ZARZ_W01<br>K2_Zarz_W02<br>K2_Zarz_U01<br>K2_ZARZ_U02<br>K2_Zarz_U03 | C1<br>C2 | Wy1,<br>Wy3÷Wy11<br>Ćw3÷Ćw7 | N2,<br>N3,<br>N4, N5 |
| **PEK_U02** | K2_Zarz_W02<br>K2_ZARZ_W03<br>K1_Zarz_U03 | C3 | Wy1, Wy2,<br>Wy5÷Wy11 | N3,N4 |
| **PEK_K01** (competence) | K2_Zarz_K01<br>K2_Zarz_K08 | C3 | Wy1÷Wy11<br>Ćw1÷Ćw7 | N1, N3, N4, N5 |

** - type of directional symbols / specialization of learning outcomes
*** - from the table above

**FACULTY OF COMPUTER SCIENCE AND MANAGEMENT**

**SUBJECT CARD**

| | |
|---|---|
| **Name in Polish** | **Analiza systemów informacyjnych** |
| **Name in English** | **Information Systems Analysis** |
| **Main field of study (if applicable):** | **Management** |
| **Specialization (if applicable):** | **Business Information System (BIS)** |
| **Level and form of studies:** | **2nd, level,** |
| **Kind of subject:** | **obligatory** |
| **Subject code** | **IEZ1201W** |
| **Group of courses** | **NO** |

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** | | | | |
| Number of hours of total student workload (CNPS) | **30** | | | | |
| Form of crediting | **crediting with grade** | | | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | **1** | | | | |
| including number of ECTS points for practical (P) classes | | | | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0,5** | | | | |

\*delete as applicable

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**

1. No prerequisites

This is the initial systems unit and it introduces students to the fundamental concepts and terminology used in information systems analysis and design by examining procedures, systems, the components of information systems, common business information systems, types of information systems, and organizational levels.

\

**SUBJECT OBJECTIVES**

C1   Provide an organizational context and background for the information system;

C2   Introduce general information systems analysis concepts and principles for information requirements gathering and specification process.

C3   Asses alternative approaches to developing information systems and information strategies for a business organization.

## SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W01 Knows and understands the business context of information system.

PEK_W02 Knows a typical information Systems Development Life Cycle (SDLC) and principles of information strategy planning.

PEK_W02 Knows the principles, terminology and techniques associated with information systems analysis – especially with information requirements identification.

relating to skills:

relating to social competences:

PEK_K01 Capable to develop her/his knowledge and skills, to collaborate and to work in groups, ready to identify, analyze and solve problems in the area of information system development projects from a stakeholder/analyst point of view.

PEK_K02. Capable to effectively communicate ideas of information systems analysis during information requirements gathering and specification process.

## PROGRAMME CONTENT

| Form of classes - lecture | | Number of hours |
|---|---|---|
| Lec 1 | Introduction to information systems – general systems theory and business context. Components of information system. | 2 |
| Lec 2 | Information Systems Development Life Cycles (SDLC) models. | 2 |
| Lec 3 | Analysts and stakeholders perspectives of information system analysis | 2 |
| Lec 4 | Information system architecture. | 2 |
| Lec 5 | Methods and techniques for information requirements gathering. | 2 |
| Lec 6 | Information requirements analysis and specification process. | 2 |
| Lec 7 | Information strategy planning. | 2 |
| Lec 8 | Acceptance written test. | 1 |
| | Total hours | 15 |

| Form of classes - class | | Number of hours |
|---|---|---|
| Cl 1 | | |
| Cl 2 | | |
| Cl 3 | | |
| Cl 4 | | |
| .. | | |
| | Total hours | |

| Form of classes - laboratory | | Number of hours |
|---|---|---|
| Lab 1 | | |
| Lab 2 | | |
| Lab 3 | | |
| Lab 4 | | |

| | | |
|---|---|---|
| Lab 5 | | |
| … | | |
| | Total hours | |

| Form of classes - project | | Number of hours |
|---|---|---|
| Proj 1 | | |
| Proj 2 | | |
| Proj 3 | | |
| Proj 4 | | |
| … | | |
| | Total hours | |

| Form of classes - seminar | | Number of hours |
|---|---|---|
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| … | | |
| | Total hours | |

## TEACHING TOOLS USED

N1. Lecture

N2. Multimedia presentation

N3. Written test

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| P | *PEK_W01* <br> *PEK_W02* <br> *PEK_W03* <br> *PEK_K01(partialy)* <br> *PEK_K02(partialy)* | Written test |
| P=1, F=0 | | |

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[1] Kendall, K.E. & Kendall, J.E., Systems Analysis & Design, 7th ed., Upper Saddle River : Pearson/Prentice Hall, cop. 2008.
[2] Chaffey, D. &White, D., Business Information Management, 2nd ed., Harlow [etc.] : Pearson Education, 2011.
[3] Ward J., Peppard J., Strategic Planning for Information Systems, 3rd ed., Chichester : John Wiley & Sons, 2009.

### SECONDARY LITERATURE:

[1] Alexander I.F., Stevens R., Writing Better Requirements, Addison-Wesley, 2002.
[2] Cadle J., Paul D, Turner P., Business Analysis Techniques, British Informatics Society, Swindon, 2010
[3] Robertson S & Robertson J., Mastering Requirements Process, 2nd ed., Addison-Wesley, Boston 2006.

## SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Maria Galant-Pater, maria.galant-pater@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Information Systems Analysis**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALIZATION **Business Information Systems**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01** **(knowledge)** | K2_ZARZ_W05; K2_ZARZ_W06 | C1 | Lec 1, Lec 3, Lec 4, Lec 5, Lec 7 | N1, N2, N3 |
| **PEK_W02** | S2_BIS_W05 | C3 | Lec 2, Lec 4 | N1, N2, N3 |
| **PEK_W03** | S2_BIS_W05 | C2 | Lec 1, Lec 5, Lec 6 | N1, N2, N3 |
| **PEK_K01** **(competences)** | K2_ZARZ_K06 | C1,C3 | Lec 2, Lec 3, Lec 5, Lec 6 | N1, N2, N3 |
| **PEK_K02** | K2_ZARZ_K06 | C2 | Lec 2, Lec 3, Lec 5, Lec 6 | N1, N2, N3 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

FACULTY Computer Science and Management / DEPARTMENT ………………

## SUBJECT CARD

**Name in Polish Internetowe serwisy i systemy informacyjne**
**Name in English Internet Information Services and Systems**
**Main field of study (if applicable): Business Information Systems**
**Specialization (if applicable): ……………………..**
**Level and form of studies: 2nd level, full-time**
**Kind of subject: obligatory**
**Subject code IEZ1202**
**Group of courses NO**

| | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | 15 | | 30 | | |
| Number of hours of total student workload (CNPS) | 60 | | 60 | | |
| Form of crediting | crediting with grade | | crediting with grade | | |
| For group of courses mark (X) final course | | | | | |
| Number of ECTS points | 2 | | 2 | | |
| including number of ECTS points for practical (P) classes | | | | | |
| including number of ECTS points for direct teacher-student contact (BK) classes | 0.5 | | 1.0 | | |

*delete as applicable

## PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
Basic knowledge of and skills in the information technology, programming and networking.
\

## SUBJECT OBJECTIVES
C1 To acquire knowledge of the computer networks and protocols – operation, diagnostics, applications and security.
C2 To acquire knowledge of the properties and features of the hosting providers and their services.
C3 To acquire knowledge of the Internet application servers, their programming languages and database types.
C4 To acquire knowledge of the various Internet information systems, their features and applications in management.
C5 To identify the commercial and free Internet information systems on the market.
C6 To acquire skills in installing and configuring server-side information systems and databases.

## SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:
PEK_W01 Understands how computer networks and protocols operate and how to diagnose them.
PEK_W02 Is aware of and has elementary knowledge of the threats and preventive measures
for securing the network communications.
PEK_W03 Knows main properties and features of the hosting service providers.
PEK_W04 Has elementary knowledge of the Internet application servers, their programming
frameworks and databases.

PEK_W05 Knows the types of the Internet information systems and their applications in organizations.

relating to skills:
PEK_U01 Can use appropriate network diagnostic tools.
PEK_U02 Is able to send and receive digitally signed and encrypted messages.
PEK_U03 Can compare features of application hosting service platforms and match them to the needs of an organization.
PEK_U04 Can match an Internet information system to the needs of an organization.
PEK_U05 Can sign up for and configure an application hosting service account.
PEK_U06 Can transfer to the server, install and configure server-side information system applications.

| PROGRAMME CONTENT | | |
|---|---|---|
| **Form of classes - lecture** | | **Number of hours** |
| Lec 1 | Introduction | 1 |
| Lec 2 | Computer networks, protocols, diagnostics and security | 2 |
| Lec 3 | Internet information systems: idea, architecture and types | 1 |
| Lec 4 | Hosting services and application servers | 1 |
| Lec 5 | The market of client-server software: an overview of free and commercial solutions and areas of their application | 1 |
| Lec 6 | Description, features, applications and overview of the CMS systems | 1 |
| Lec 7 | Description, features, applications and overview of the ECMS and eCommerce/Shopping Cart systems | 1 |
| Lec 8 | Description, features, applications and overview of the LMS and CRM systems | 1 |
| Lec 9 | Other types of web applications. Voice and audio-video systems | 1 |
| Lec 10 | A web browser as the application execution platform | 1 |
| Lec 11 | The client-side programming – an overview | 1 |
| Lec 12 | The server-side programming and databases – an overview | 1 |
| Lec 13 | Grading, remarks and conclusions | 2 |
| | Total hours | 15 |
| **Form of classes - laboratory** | | **Number of hours** |
| Lab 1 | Introduction to the subject, the computer lab environment and safety rules | 2 |
| Lab 2 | Assignment 1: networking services and protocols, diagnostics and security | 4 |
| Lab 3 | Assignment 1: presentation and assessment of results | 2 |
| Lab 4 | Assignment 2: identification of the hosting services on the market, creating accounts, testing the features of the accounts, script interpreters and databases | 4 |
| Lab 5 | Assignment 2: presentation and assessment of results | 2 |
| Lab 6 | Assignment 3: identification of the available solutions, installing and testing a system of type 1 (mandatory type: CMS) | 4 |

| Lab 7 | Assignment 3: presentation and assessment of results | 2 |
|---|---|---|
| Lab 8 | Assignment 4: identification of the available solutions, installing and testing a system of type 2 (individual choice) | 2 |
| Lab 9 | Assignment 4: presentation and assessment of results | 2 |
| Lab 10 | Assignment 5: identification of the available solutions, installing and testing a system of type 3 (individual choice) | 2 |
| Lab 11 | Assignment 5: presentation and assessment of results | 2 |
| Lab 12 | Summing-up and remarks about problems and solutions | 2 |
| | Total hours | **30** |

## TEACHING TOOLS USED

N1. Traditional lecture with overhead slides
N2. Short movies demonstrating some features of the information systems being addressed
N3. Assignments to carry out individually or in teams, in the computer lab and at home
N4. Discussion of the achievements (causes of failures if applicable) during each presentation of students' results

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_W01-PEK_W05 | Answers to questions (written or at a computer) |
| F2 | PEK_U01-PEK_U06 | Assessment of achievements and understanding of the assignment issues (during presentation and discussion) |
| F3 | PEK_U01-PEK_U06 | Assessment of the reports of the assignments |
| F4 | PEK_W01-PEK_W05 | Lecture attendance (bonus credits) |
| P=F1+F2+F3+F4 | | |

## PRIMARY AND SECONDARY LITERATURE

**PRIMARY LITERATURE:**

[1] Course resources published at the course website.
[2] Stallings W., Case T., Business Data Communications – Infrastructure, Networking and Security, Prentice Hall, 2012.
[3] Nixon R., Learning PHP, MySQL, JavaScript, and CSS: A Step-by-Step Guide to Creating Dynamic Websites, O'Reilly Media, 2012.
[4] Szemplinski P.E., ECM Buyer Beware: Real Insights & Answers for Decision Makers, lulu.com, 2011.

**SECONDARY LITERATURE:**

[1] Websites of software vendors and others on the subject.
[2] Kurose J.F., Ross K.W., Computer Networking, Prentice Hall, 2012.
[3] Ullman L., PHP and MySQL for Dynamic Web Sites, Peachpit Press, 2011.
[4] Rockoff L., The Language of SQL: How to Access Data in Relational Databases, Course Technology PTR, 2010.
[5] Canavan T., CMS Security Handbook: The Comprehensive Guide for WordPress, Joomla, Drupal, and Plone, Wiley, 2011.

[6]    Cameron S.A., Enterprise Content Management - A Business and Technical Guide, British Informatics Society Ltd, 2011.

**SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)**

Wiesław Dobrowolski, wieslaw.dobrowolski@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Internet Information Services and Systems**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY Business Information
Systems
AND SPECIALIZATION ………………………..

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| PEK_W01 | S2_BIS_W03 | C1 | Wy2 | N1 |
| PEK_W02 | S2_BIS_W03 | C1 | Wy2 | N1 |
| PEK_W03 | S2_BIS_W03 | C2 | Wy4 | N1, N2 |
| PEK_W04 | S2_BIS_W03 | C3 | Wy10–Wy12 | N1 |
| PEK_W05 | S2_BIS_W03 | C4, C5 | Wy3, Wy5–Wy9 | N1, N2 |
| PEK_U01 | S2_BIS_U05 | C1 | La2, La3 | N3, N4 |
| PEK_U02 | S2_BIS_U05 | C1 | La2, La3 | N3, N4 |
| PEK_U03 | S2_BIS_U05 | C2, C3 | La4, La5 | N3, N4 |
| PEK_U04 | S2_BIS_U05 | C4 | La6–La11 | N3, N4 |
| PEK_U05 | S2_BIS_U05 | C6 | La4, La5 | N3, N4 |
| PEK_U06 | S2_BIS_U05 | C6 | La6–La11 | N3, N4 |
| PEK_W01 | S2_BIS_W03 | C1 | Wy2 | N1 |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above

WYDZIAŁ INFORMATYKA I ZARZĄDZANIE

**KARTA PRZEDMIOTU**
**Nazwa w języku polskim Modelowanie systemów informacyjnych zarządzania**
**Nazwa w języku angielskim Management Information Systems Modeling**
**Kierunek studiów (jeśli dotyczy): Zarządzanie**
**Specjalność (jeśli dotyczy): Business Information Systems**
**Stopień studiów i forma:      II stopień, stacjonarna**
**Rodzaj przedmiotu:      obowiązkowy**
**Kod przedmiotu      IEZ1203W,  IEZ1203L**
**Grupa kursów      NIE**

|  | Wykład | Ćwiczenia | Laboratorium | Projekt | Seminarium |
|---|---|---|---|---|---|
| Liczba godzin zajęć zorganizowanych w Uczelni (ZZU) | **15** |  | **15** |  |  |
| Liczba godzin całkowitego nakładu pracy studenta (CNPS) | **60** |  | **60** |  |  |
| Forma zaliczenia | **zaliczenie na ocenę** |  | **zaliczenie na ocenę** |  |  |
| Dla grupy kursów zaznaczyć kurs końcowy (X) |  |  |  |  |  |
| Liczba punktów ECTS | **2** |  | **2** |  |  |
| w tym liczba punktów odpowiadająca zajęciom o charakterze praktycznym (P) |  |  | **2** |  |  |
| w tym liczba punktów ECTS odpowiadająca zajęciom wymagającym bezpośredniego kontaktu  (BK) | **0.5** |  | **0.5** |  |  |

\*niepotrzebne skreślić

**WYMAGANIA WSTĘPNE W ZAKRESIE WIEDZY, UMIEJĘTNOŚCI I INNYCH KOMPETENCJI**
1.      Wiedza o metodach analizy potrzeb użytkowników SIZ
2.      Znajomość podstaw i umiejętność użytkowania komputerów

\

**CELE PRZEDMIOTU**
C1. Zdobycie wiedzy dotyczącej umiejętności budowy modeli systemów informacyjnych zarządzania w różnych obszarach funkcjonalnych organizacji.
C2. Zdobycie umiejętności zastosowania odpowiednich narzędzi komputerowego wspomagania tworzenia modeli systemów informacyjnych zarządzania.

## PRZEDMIOTOWE EFEKTY KSZTAŁCENIA

Z zakresu wiedzy:

PEK_W01 – ma uporządkowaną wiedzę w zakresie metod i technik budowy modeli funkcji systemów informatycznych zarządzania przy podejściu strukturalnym.

PEK_W02 – ma uporządkowaną wiedzę w zakresie metod i technik budowy modeli danych systemów informatycznych zarządzania przy podejściu strukturalnym.

Z zakresu umiejętności:

PEK_U01 - umie tworzyć modele prostych aplikacji komputerowych wspierających rozwiązania typowych problemów zarządczych i merytorycznych w poszczególnych obszarach funkcjonalnych organizacji.

PEK_U02 – potrafi zastosować narzędzia informatyczne do wspomagania konstrukcji modeli aplikacji komputerowej.

Z zakresu kompetencji społecznych:

## TREŚCI PROGRAMOWE

| Forma zajęć - wykład | | Liczba godzin |
|---|---|---|
| Wy1 | Wprowadzenie do problematyki modelowania. Modelowanie funkcji biznesowych - DHF. | 2 |
| Wy2 | Rodzaje zależności i diagramy następstw - DZF. | 2 |
| Wy3 | Podstawy modelowania danych. Związki wieloargumentowe, rekurencyjne, gen/spec i agregacji. | 2 |
| Wy4 | Model konceptualny danych (DO-Z). | 2 |
| Wy5 | Modelowanie klasycznych struktur informacyjnych i wzorce – DO-Z. | 1 |
| Wy6 | Metody kontroli spójności i kompletności modelu strukturalnego – macierz funkcja/encja, DPD. | 2 |
| Wy7 | Zasady transformacja DO-Z do schematu relacyjnej bazy danych. | 2 |
| Wy8 | Kolokwium | 2 |
| | **Suma godzin** | **15** |

| Forma zajęć - ćwiczenia | | Liczba godzin |
|---|---|---|
| Ćw1 | | |
| Ćw2 | | |
| Ćw3 | | |
| Ćw4 | | |
| .. | | |
| | Suma godzin | |

| Forma zajęć - laboratorium | | Liczba godzin |
|---|---|---|
| La1 | Konstrukcja modelu funkcji biznesowych w postaci hierarchii funkcji (DHF) – Office Visio. | 2 |
| La2 | Analiza zależności funkcji elementarnych i budowa diagramu następstw (DZF) - Office Visio. | 2 |
| La3 | Analiza potrzeb informacyjnych. Klasyfikacja zbiorów informacji, identyfikacja kategorii encji | 2 |
| La4 | Budowa modelu konceptualnego danych - Office Visio. | 2 |
| La5 | Analiza macierzy powiązań funkcja/encja F/E. | 2 |
| La6 | Kontrola spójności i kompletności modelu strukturalnego za pomocą diagramu przepływu danych (DPD) - Office Visio. | 2 |
| La7 | Wykonanie projektu relacyjnej bazy danych za pomocą reguł transformacji – Office Access. | 2 |

| La8 | Ocena końcowa | 1 |
|-----|---------------|---|
| | **Suma godzin** | **15** |

| **Forma zajęć - projekt** | | Liczba godzin |
|---------------------------|--|---------------|
| Pr1 | | |
| Pr2 | | |
| … | | |
| | Suma godzin | |

| **Forma zajęć - seminarium** | | Liczba godzin |
|------------------------------|--|---------------|
| Se1 | | |
| Se2 | | |
| Se3 | | |
| … | | |
| | Suma godzin | |

| **STOSOWANE NARZĘDZIA DYDAKTYCZNE** |
|-------------------------------------|
| N1. komputer <br> N2. rzutnik multimedialny <br> N3. komputerowe aplikacje użytkowe: Ms PowerPoint, Ms Word, Ms Visio <br> N4. tablica |

## OCENA OSIĄGNIĘCIA PRZEDMIOTOWYCH EFEKTÓW KSZTAŁCENIA

| **Oceny** (F – formująca (w trakcie semestru), P – podsumowująca (na koniec semestru) | Numer efektu kształcenia | Sposób oceny osiągnięcia efektu kształcenia |
|---|---|---|
| F1 | PEK_U01, PEK_U02 | raport |
| F2 | PEK_U01, PEK_U02 | raport |
| F3 | PEK_U01, PEK_U02 | raport |
| P1 wykład | PEK_W01, PEK_W02 | kolokwium |
| PW (wykład) = P1 <br> PL (laboratorium) = F1+F2+F3 | | |

| **LITERATURA PODSTAWOWA I UZUPEŁNIAJĄCA** |
|-------------------------------------------|
| **LITERATURA PODSTAWOWA:** <br><br> [1]  Barker R., CASE\*Method – Entity Relationship Modellin, Addison-Wesley PC , 1989 <br> [2]  Barker R., Longman C., CASE\*Method – Function and Process Modelling, Addison-Wesley PC , 1989 <br><br> **LITERATURA UZUPEŁNIAJĄCA:** <br><br> [1]  Gane C., Sarson T., Structured Systems Analysis - Tools and Techniques, Prentice-Hall, Englewood Cliffs, New Jersey, 1989 |
| **OPIEKUN PRZEDMIOTU (IMIĘ, NAZWISKO, ADRES E-MAIL)** |
| **Grażyna, Hołodnik-Janczura, grazyna.holodnik-janczura@pwr.wroc.pl** |

MACIERZ POWIĄZANIA EFEKTÓW KSZTAŁCENIA DLA PRZEDMIOTU
**Modelowanie systemów informacyjnych zarządzania**
Z EFEKTAMI KSZTAŁCENIA NA KIERUNKU **Zarządzanie**
I SPECJALNOŚCI **Business Information Systems**

| Przedmiotowy efekt kształcenia | Odniesienie przedmiotowego efektu do efektów kształcenia zdefiniowanych dla kierunku studiów i specjalności (o ile dotyczy)** | Cele przedmiotu*** | Treści programowe*** | Numer narzędzia dydaktycznego*** |
|---|---|---|---|---|
| **PEK_W01 (wiedza)** | S2_BIS_W04 | C1 | Wy1, Wy2, Wy6 | N1, N2, N3, N4 |
| **PEK_W02** | S2_BIS_W04 | C1 | Wy3, Wy4, Wy5, wy6, Wy7 | N1, N2, N3, N4 |
| **PEK_U01 (umiejętności)** | S2_BIS_U03 | C2 | La1, La2, La3, La4, La5, La6, La7 | N1, N2, N3, N4 |
| **PEK_U02** | S2_BIS_U03 | C2 | La1, La2, La4, La6, La7 | N1, N2, N3, N4 |
| **PEK_K01 (kompetencje)** | | | | |

** - wpisać symbole kierunkowych/specjalnościowych efektów kształcenia
*** - z tabeli powyżej

FACULTY Faculty of Computer Science and Management

**SUBJECT CARD**

**Name in Polish** Modelowanie systemów informacyjnych zarządzania
**Name in English Management Information Systems Modeling**
**Main field of study (if applicable): Management**
**Specialization (if applicable): Business Information Systems**
**Level and form of studies:  2nd level, full-time**
**Kind of subject: obligatory**
**Subject code** IEZ1203W,  IEZ1203L
**Group of courses NO**

|  | Lecture | Classes | Laboratory | Project | Seminar |
|---|---|---|---|---|---|
| Number of hours of organized classes in University (ZZU) | **15** |  | **15** |  |  |
| Number of hours of total student workload (CNPS) | **60** |  | **60** |  |  |
| Form of crediting | **crediting with grade** |  | **crediting with grade** |  |  |
| For group of courses mark (X) final course |  |  |  |  |  |
| Number of ECTS points | **2** |  | **2** |  |  |
| including number of ECTS points for practical (P) classes |  |  | **2** |  |  |
| including number of ECTS points for direct teacher-student contact (BK) classes | **0.5** |  | **0.5** |  |  |

*

**PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES**
1. Knowledge of the software user requirements analysis methods
2. Basic knowledge and skills of the computer using

\

**SUBJECT OBJECTIVES**
C1 Getting knowledge on skills building models of management information systems in different functional areas of the organization.
C2 Getting the skills to apply the right tools for computer-aided modeling of management information systems.

**SUBJECT EDUCATIONAL EFFECTS**
relating to knowledge:
PEK_W01 - student has ordered knowledge of the methods and techniques of building models of systems management functions with the structural approach.
PEK_W02 - student has ordered knowledge of the methods and techniques of building data models of information systems management at the structural approach.

relating to skills:
PEK_U01 - student can create a models of simple computer systems to support management solutions to common problems and issues in the various functional areas of the organization.
PEK_U02 - student can use software tools to support the design of computer systems models.

relating to social competences:

| PROGRAMME CONTENT | |
|---|---|
| **Form of classes - lecture** | **Number of hours** |
| Lec 1   Introduction. Repository. | 2 |
| Lec 2   Business function modeling -FHD. | 2 |
| Lec 3   Function dependency and events – FDD. | 2 |
| Lec 4   Basic rules and definitions for entities, relationships, attributes. Multiple and recursive relationship, generalization, aggregation. | 2 |
| Lec 5   Entity Relational Model – ERD. Classical structures and generic patterns (ERD). | 1 |
| Lec 6   Consistence and completeness of the structured model checking methods: F to E, DFD. | 2 |
| Lec 7   Rules of the Transformation from ERD to logical relational database design. | 2 |
| Lec 8   Test | 2 |
| Total hours | 15 |
| **Form of classes - class** | **Number of hours** |
| Cl 1 | |
| Cl 2 | |
| Cl 3 | |
| Total hours | |
| **Form of classes - laboratory** | **Number of hours** |
| Lab 1   Case study "Hydraulics": business terms - repository. | 2 |
| Lab 2   The subject (functional) areas extraction. Decomposition and grouping functions (FHD). | 2 |
| Lab 3   Analysis of the interdependencies between functions and the events – process model building (FDD). | 2 |
| Lab 4   Analysis of information needs: an entity type identification. Analysis of the business relationship – definition and representation (ERD) | 2 |
| Lab 5   Analysis of the movement of data between processes. Consistency and completeness checking. | 2 |
| Lab 6   Using the basic technique of logical relational database design | 2 |
| Lab 7   Analysis of rules and details of business functions <br><br> – the usage of an entity type by a function | 2 |
| Lab 8   Signing indexes | 1 |
| Total hours | 15 |
| **Form of classes - project** | **Number of hours** |
| Proj 1 | |

| | | | Number of hours |
|---|---|---|---|
| Proj 2 | | | |
| Proj 3 | | | |
| | Total hours | | |

| Form of classes - seminar | | Number of hours |
|---|---|---|
| Sem 1 | | |
| Sem 2 | | |
| Sem 3 | | |
| | Total hours | |

## TEACHING TOOLS USED

N1. computer
N2. projector
N3. Ms PowerPoint, Ms Word, Ms Visio
N4. blackboard or whiteboard

## EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

| Evaluation (F – forming (during semester), P – concluding (at semester end) | Educational effect number | Way of evaluating educational effect achievement |
|---|---|---|
| F1 | PEK_U01, PEK_U02 | report |
| F2 | PEK_U01, PEK_U02 | report |
| F3 | PEK_U01, PEK_U02 | report |
| P1 | PEK_W01, PEK_W02 | test |
| PLec = P1 PLab = F1+F2+F3 | | |

## PRIMARY AND SECONDARY LITERATURE

### PRIMARY LITERATURE:

[[1] Barker R., CASE*Method – Entity Relationship Modellin, Addison-Wesley PC , 1989
[2] Barker R., Longman C., CASE*Method – Function and Process Modelling, Addison-Wesley PC , 1989

### SECONDARY LITERATURE:

[[1] Gane C., Sarson T., Structured Systems Analysis - Tools and Techniques, Prentice-Hall, Englewood Cliffs, New Jersey, 1989

### SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

**Grażyna, Hołodnik-Janczura, grazyna.holodnik-janczura@pwr.wroc.pl**

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
**Management Information Systems Modeling**
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALIZATION **Business Information Systems**

| Subject educational effect | Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)** | Subject objectives*** | Programme content*** | Teaching tool number*** |
|---|---|---|---|---|
| **PEK_W01 (knowledge)** | S2_BIS_W04 | C1 | Lec1, Lec2, Lec6 | N1, N2, N3, N4 |
| **PEK_W02** | S2_BIS_W04 | C1 | Lec3, Lec4, Lec 5, Lec6, Lec 7 | N1, N2, N3, N4 |
| **PEK_U01 (skills)** | S2_BIS_U03 | C2 | Lab 1, Lab 2, Lab 3, Lab 4, Lab 5, Lab 6, Lab 7 | N1, N2, N3, N4 |
| **PEK_U02** | S2_BIS_U03 | C2 | Lab 1, Lab 2, Lab 4, Lab 6, Lab7 | N1, N2, N3, N4 |
| **PEK_K01 (competences)** | | | | |

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above