

Proposal of courses for Erasmus students

Academic year 2021 / 2022



FACULTY OF MANAGEMENT - LUBLIN UNIVERSITY OF TECHNOLOGY PL LUBLIN03

**WINTER SEMESTER COURSES**

FIRST CYCLE PROGRAMME	COURS ID	ECTS
COMPUTER SCIENCE IN MANAGEMENT	Z04	4
CONSUMER BEHAVIOUR	Z05	4
FINANCIAL ANALYSIS	Z13	5
INDUSTRY 4.0	Z39	4
FUNDAMENTALS OF MARKETING	Z15	5
PRODUCTION PLANNING AND MANAGEMENT	Z31	5
FINANCIAL ACCOUNTING AND REPORTING	Z21	5

SECOND CYCLE PROGRAMME	COURS ID	ECTS
CORPORATE SOCIAL RESPONSIBILITY (CSR)	Z07	4
DESIGN THINKING	Z09	2
ENTERPRISE PROJECT MANAGEMENT (EPM)	Z10	4
OCCUPATIONAL ENVIRONMENT	Z26	4
OCCUPATIONAL STRESS	Z28	4
STATISTICS IN MANAGEMENT	Z35	3
EMERGING TRENDS IN HRM	Z38	4



SUMMER SEMESTER COURSES

FIRST CYCLE PROGRAMME	COURS ID	ECTS
CORPORATE FINANCE	Z06	5
ERGONOMICS	Z11	6
INTEGRATED MARKETING COMMUNICATIONS	Z17	5
MARKETING RESEARCH	Z23	5
MATHEMATICS	Z24	6
MICROECONOMICS	Z25	6
ADVERTISING AND MEDIA COVERAGE	Z40	4

SECOND CYCLE PROGRAMME	COURS ID	ECTS
DATA ANALYTICS AND MACHINE LEARNING WITH PYTHON	Z19	5
INTRODUCTION TO INTERNATIONAL BUSINESS	Z18	4
OCCUPATIONAL HEALTH RISK ASSESSMENT	Z27	4
OPERATIONAL RESEARCH IN MANAGEMENT	Z29	3
POLITICAL & GLOBAL ECONOMICS	Z30	5
STOCK MARKET INVESTMENTS	Z36	4
DESIGN INNOVATION R&D PROCESS AND TECHNOLOGY TRANSFER	Z37	5



ADDITIONAL PROVISIONS:

- The applying student can **select courses corresponding to no more than 32 ECTS credits** per semester.
- The student is allowed to choose courses offered by the other faculties of the Lublin University of Technology, provided that the number of ECTS credits assigned to these courses **is no more than 20%** of the total number of ECTS credits specified in his/her Learning Agreement (LA).
- Upon arrival the student may alter some of the courses originally listed in his/her Learning Agreement (LA) within the limits of **up to 30%** of the total number of ECTS credits specified in the original Learning Agreement.
- The "During the mobility" form must be delivered to the Coordinator no later than **7 days after the organizational meeting** held at the faculty.
- When the number of students applying for a given course is less than 12, the faculty will have the right to cancel the course. In this case the student should amend his/her Learning Agreement.

IMPORTANT NOTICE:

- The students have to check carefully **PRELIMINARY REQUIREMENTS** in order to make sure they are eligible for a desired course.
- The students are required to check in which semester the course will be delivered. The courses will be delivered exclusively in semesters specified in this offer.



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ADVERTISING AND MEDIA COVERAGE - Z40

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, CLASS
NUMBER OF HOURS: 30 (15 LECTURE +15 CLASS)	ECTS: 4
SEMESTER: SUMMER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	

LANGUAGE OF INSTRUCTION: English

PRELIMINARY REQUIREMENTS: Intermediate level of English. All students willing to participate in the class are required to contact the teacher; personally or via email otherwise they will not be allowed to enrol on a course.

CONTENTS: Advertisement as an instrument of activity of companies on the market. 6M scheme and marketing brief. Defining goals and assessing them via advertisements. Emotions, celebrities, music and pictures as determinants of successful communication. Symbolic meaning of colours in adverts. Creating media coverage for different market segments. Factors influencing success of the advertising campaign. Case studies of different ads.

EFFECTS OF EDUCATION PROCESS: Ability to define advertising and media coverage, describe the process of creating advertisement, evaluate the effects of the media coverage, create an advertising brief.

LITERATURE:

- *Ibach H., How to write an inspired creative brief, 2009;*
- *Sullivan L., Hey, Whipple, Squeeze This: The Classic Guide to Creating Great Ads, 2012.*

TEACHING METHODS: Multimedia presentation, tasks, cases, discussions.

ASSESSMENT METHODS: Written exam and completion of case studies.

TEACHER: Magdalena Maciaszczyk, Ph.D.

**COMPUTER SCIENCE IN MANAGEMENT - Z04**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, LABORATORY
NUMBER OF HOURS: 30 (5 LECTURE + 25 LABORATORY)	ECTS: 4
SEMESTER: WINTER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Information technology	
CONTENTS: 1. Informing students about a computer laboratory regulations, discussing health and safety rules, presentation of the laboratory curriculum and principles of the coursework assessment. 2. Material consolidation on spreadsheet basics: worksheet formatting, types of cell references, operators and arithmetic formulae, automatic cells filling in a series, making simple charts. 3. Advanced chart making. Creating invoices in spreadsheet. 4. Advanced mathematical, logical and financial calculations in a spreadsheet. 5. Text operations in a spreadsheet. 6. Work on 3-D data areas. 7. Arrays and array formulas. 8. Spreadsheet database management. 9. Coursework assessment.	
EFFECTS OF EDUCATION PROCESS: Acquainting students with advanced possibilities of spreadsheets. Learning the skills of using advanced functions of spreadsheets.	
LITERATURE: <ul style="list-style-type: none">• Walkenbach J., <i>Excel 2007 Bible</i>, Wiley Publishing Inc, Indianapolis, USA, 2007.• Manzo J.J., <i>Microsoft Office Excel 2007 in Business Core and Student Resource</i>, Prentice Hall, New Jersey, USA, 2008.	
TEACHING METHODS: Laboratory exercise	
ASSESSMENT METHODS: Test	
TEACHER: Piotr Ziń MSc, Eng.	

**CONSUMER BEHAVIOUR - Z05**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, CLASS
NUMBER OF HOURS: 30 (15 LECTURE + 15 CLASS)	ECTS: 4
SEMESTER: WINTER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Intermediate level of English. The course starts two weeks after the beginning of a semester. All students willing to participate in the class are required to contact the teacher, personally or via email, before that date, otherwise they will not be allowed to enrol on a course.	
CONTENTS: The idea of consumers' activity on the market. The structure of the purchase process. Environmental, social, personal and psychological factors that influence and shape consumers' behaviour. Information gathering, alternatives evaluation and choice, risk, satisfaction and loyalty.	
EFFECTS OF EDUCATION PROCESS: Ability to define the idea of consumer behaviour. Knowledge on and ability to identify the structure of consumer's decision making process and factors shaping and influencing a choice. Knowledge on general mechanisms used in marketing communications in order to shape consumer's behaviour	
LITERATURE: <ul style="list-style-type: none">• <i>Evans M., Jamal A., Foxall G., Consumer behaviour; Wiley, 2009.</i>• <i>Schiffman L., Kanuk L., Consumer behaviour, Pearson, 2009.</i>	
TEACHING METHODS: Lecture, interactive presentations, discussion, case studies.	
ASSESSMENT METHODS: Written exam and completion of case studies.	
TEACHER: Magdalena Maciaszczyk Ph.D.	

**CORPORATE FINANCE - Z06**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, CLASS
NUMBER OF HOURS: 30 (15 LECTURE +15 CLASS)	ECTS: 5
SEMESTER: SUMMER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Basics of accounting, rudiments of financial analysis.	
CONTENTS: Essence of financial management. Financial reports analysis (balance sheet, profit and loss account, cash flow statement). Methods of financial standing estimation. Cost of capital. Methods of shaping company's optimum capital structure. Methods of evaluation of company's investments. Factors which determine company's valuation. Methods of company's valuation	
EFFECTS OF EDUCATION PROCESS: To give skills in corporate finance, prepare to read company's financial statements, to understand the importance of changing money's valuation in making decision processes.	
LITERATURE: <ul style="list-style-type: none">• Ehrhardt M.: <i>Corporate Finance</i>, South - West Thompson Learning, 2008.• Lummy S.: <i>Corporate Finance Theory & Practice</i>, Thomson Learning, 2008.	
TEACHING METHODS: Multimedia presentation, tasks, cases, discussions.	
ASSESSMENT METHODS: Final exam (test and case study).	
TEACHER: Artur Paździor, Ph.D., D.Sc. Eng. Professor at LUT	

**CORPORATE SOCIAL RESPONSIBILITY (CSR) - Z07**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURES WITH PRACTICAL ELEMENTS OF SEMINARS
NUMBER OF HOURS: 30 (10 LECTURE + 20 PROJECT)	ECTS: 4
SEMESTER: WINTER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: None	
CONTENTS: 1. Corporate Social Responsibility (CSR) - historical background, definition, recognition of contemporary models and standards of social responsibility. 2. Conditions and perception of CSR in Poland and in the world. 3. Basic models of social responsibility. 4. Stakeholder theory and CSR. 5. Moral choices individuals in consumer culture. 6. Contemporary ethical standards of consumer culture. 7. Responsibility for the environment. 8. Reporting as an important element of CSR strategies in the organization. 9. Corporate social responsibility as a source of competitive advantage.	
EFFECTS OF EDUCATION PROCESS: Understanding the issue of corporate social responsibility, knowing how to define and identify models, methods, tools used in the CSR, gaining knowledge of how to create and apply strategies of CSR.	
<ul style="list-style-type: none">Annor da Silva Junior, Priscilla de Oliveira Martins-Silva, Katia Cyrlene de Araújo Vasconcelos, Vitor Correa da Silva, Sarah Luiza Martins Silva de Brito, Jose Michel Rocha Monteiro, Sustainability and corporate social responsibility in the opinion of undergraduate students in management programs: Between the concrete and the abstract. Journal of Cleaner Production 2019 (207) p, 600-617.	
TEACHING METHODS: Participation in the classes, project, evaluation of presentations.	
ASSESSMENT METHODS: Participation in the classes, essay, evaluation of presentations.	
TEACHER: Marzena Cichorzewska, Ph.D., Barbara Mazur, Ph.D., D.Sc. Professor at LUT	

**DATA ANALYTICS AND MACHINE LEARNING WITH PYTHON - Z19**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, LABORATORY
NUMBER OF HOURS: 30 (10 LECTURE + 20 LABORATORY)	ECTS: 5
SEMESTER: SUMMER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Applicants should have intermediate knowledge of statistics, linear algebra, and good knowledge of Python programming. Additionally, Applicants must have knowledge of English on intermediate level. The course starts one week after the beginning of a semester. All students willing to participate in the class are required to contact the teacher, personally or via email, before that date, otherwise they will not be allowed to enroll to the course.	
CONTENTS: 1. Introduction to Jupyter notebook and JupyterHub - a quick tour of the data engineers IDE; 2. Introduction to numpy library: N-dimensional arrays, broadcasting functions, random number generators.;3. Exploratory data analysis with pandas library: manipulating data: loading, storing, cleaning, transforming, merging, reshaping; 4. Visualising and plotting with matplotlib and bokeh: generate plots, histograms, power spectra, bar charts, errorcharts, scatterplots; 5. Introduction to scipy with statistics: introduction to the scipy.stats package (distributions, fitting distributions and random numbers); 6. Introduction to machine learning concepts with scikit-learn: training and evaluating learning algorithms (decision trees, perceptrons, support vector machines).	
EFFECTS OF EDUCATION PROCESS: Students will learn the state of the art in data analytics and machine learning by applying the most widely used Python libraries. This knowledge will be useful for Data Analysts and Data Scientists working in all sectors where data understanding is important for carrying out a business.	
LITERATURE: <ul style="list-style-type: none">• <i>Boschetti A; Massaron, L. Python data science essentials, Packt Publishing Ltd, 2016.</i>• <i>Natingga D., Data Science Algorithms in a Week. Data analysis, machine learning, and more. Packt Publishing Ltd, 2017.</i>	
TEACHING METHODS: Presentation, hands-on laboratories and case study.	
ASSESSMENT METHODS: Project	
TEACHER: Tomasz Cieplak, Ph.D., Eng.	

**DESIGN INNOVATION R&D PROCESS AND TECHNOLOGY TRANSFER -Z37**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, PROJECT
NUMBER OF HOURS: 30 (10 LECTURE + 20 PROJECT)	ECTS: 5
SEMESTER: SUMMER	CLASS LEVEL: GRADUATE/THIRD-CYCLE STUDIES (OPTION)
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English, Spanish – complementary.	
PRELIMINARY REQUIREMENTS: For graduate level achieved the requirements for a Degree of Bachelor of Science; For third cycle achieved the requirements for a Degree of Master of Science respectively.	
CONTENTS: 1. Innovation induction; 2. Disruptive innovation; 3. Critical data analysis; 4. R&D process; 5. R&D Leadership; 6. T- shaped and Y-shaped leaders; 7. New knowledge in industrial research - description of the effect of novelties and technological challenges.	
EFFECTS OF EDUCATION PROCESS: This course aims to expose Students to the mindset, skillset and toolset associated with design, innovation and technology transfer. It does so through guided applications to framing and solving problems in innovation induction and design, business and engineering. Specifically, you will learn approaches to noticing and observing, framing, and reframing, imagining, and designing, and experimenting and testing as well as for critique and reflection. Following a human-centered design process that includes research, concept generation, prototyping, and refinement, students work as individuals and in teams to design mobile information systems and other interactive experiences. Becoming familiar with design methodologies for researching competing products and services, for modelling the current and preferred state of the world, and for prototyping and communicating solutions. The pitch presentation technique will be involved in the workshop and design part of the course. A series of lectures introduces students to a variety of types of leaders, innovators, and concepts in design and process innovation. Students will learn from practical experiences and insights and practices in applying and evaluating application forms for innovative projects. An important element will be the issues of ethics and the leadership and organization of research and scientific teams. Students will also have a chance to apply those approaches in various sectors.	
LITERATURE: <ul style="list-style-type: none"> • Bradley S. R., Hayter Ch. S., Link A. N., <i>Models and Methods of University Technology Transfer (Foundations and Trends(r) in Entrepreneurship) 5th ed. Edition, University of North Carolina Greensboro, NC, USA, 2013.</i> • O'Reilly III, C. A. and Tushman, M. L. (2016). <i>Lead and Disrupt: How to Solve the Innovator's Dilemma.</i> Stanford, CA: Stanford University Press. • <i>Disruptive Innovation: An Intellectual History and Directions for Future Research Journal of Management Studies 55:7 November 2018 doi:10.1111/joms.12349.</i> • <i>Original UCB teaching materials for top500 Innovators made available with permission from the University of California Berkeley, 2013-2015, CA, USA.</i> 	
TEACHING METHODS: Lecture and project workshops	
ASSESSMENT METHODS: Project 90% Feedback 10%. Ethical approach: All members of a group are responsible for the group's work and project presentation. In any assessment, every student shall honestly disclose any help received and sources used. In an oral assessment and Feedback session, every student shall be able to present and answer questions about the entire assignment, methods, tools and solution.	
TEACHER: Krzysztof J. Czarnocki Ph.D., D.Sc. Eng. Professor at LUT; Elzbieta Czarnocka Ph.D.	

**DESIGN THINKING - Z09**

FACULTY OF MANAGEMENT	CLASS TYPE: PROJECT
NUMBER OF HOURS: 30	ECTS: 2
SEMESTER: WINTER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Be prepared to participate, contribute, ask and answer questions during classes.	
CONTENTS: Understand the challenges and benefits of Design Thinking. Fundamental capabilities in the methodologies that designers use. Opening to innovating in multidisciplinary teams. Clear communicate about Design Thinking.	
EFFECTS OF EDUCATION PROCESS: Knowledge of creativity stimulation methods in yourself and others. Ability of incorporate Design Thinking into your everyday professional activities. Ability to participate in and lead innovation in collaborative settings.	
LITERATURE: <ul style="list-style-type: none">• <i>Martin R., Christensen K., The Best On Design Thinking, Univ. of Toronto Press, 2013.</i>	
TEACHING METHODS: Active seminars	
ASSESSMENT METHODS: 15% - Class participation (individual) 10% - Summarizing readings in class (team) 30% - Practice project + 10% presentations in class (team) 35% - Communication paper (individual)	
TEACHER: Krzysztof J. Czarnocki, Ph.D., D.Sc. Eng. Professor at LUT; Elżbieta Czarnocka, Ph.D.	

**EMERGING TRENDS IN HRM - Z38**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, PROJECT
NUMBER OF HOURS: 30 (20 LECTURE +10 PROJECT)	ECTS: 4
SEMESTER: WINTER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS:	
CONTENTS: 1. Human capital and human resources - introductory issues. The strategic dimension of human capital management; 2. Talent management in management theory and practice; 3. Professional competence management. Building a competence profile; 4. Diagnosis of professional competence; 5. Human potential management in the concept of positive organization; 6. Employee empowerment; 7. Organizational commitment management. Diagnosis of employee involvement level; 8. Generational diversity management. Building intelligent generation; 9. Employee health capital management; 10. Green HR; 11. Measurement of the value of human capital; 12. Evaluation of the subject.	
EFFECTS OF EDUCATION PROCESS: The aim of the course is to transfer knowledge and develop practical professional skills in the area of human resource management of an organization using the latest management concepts and theories. Students learn about current trends in HRM and implement projects aimed at diagnosis and solving practical management problems related to the human potential of the organization.	
LITERATURE: <ul style="list-style-type: none">• <i>Moczydłowska J.M., Barriers and Difficulties in Talent Management; Przedsiębiorczość i Zarządzanie; 2014, Volume 15, Issue 6, p. 231-241.</i>• <i>Peyrat-Guillarda D., Glińska-Noweś A. Positive Organizational Potential, Organizational Commitment and Organizational Citizenship Behaviour: a French/Polish comparison, Journal of Positive Management; January 2009, p.47-63.</i>• <i>Mullaney E., Talent Mobility. A Global Approach to Talent Management, Worldwork 2012, www.worldatwork.org.</i>	
TEACHING METHODS: Lectures, Project	
ASSESSMENT METHODS: Project/ Active participating in the classes.	
TEACHER: Barbara Mazur, Ph.D., D.Sc. Eng. Professor at LUT	

**ENTERPRISE PROJECT MANAGEMENT (EPM) - Z10**

FACULTY OF MANAGEMENT	CLASS TYPE: LABORATORY
NUMBER OF HOURS: 30 (LABORATORY)	ECTS: 4
SEMESTER: WINTER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	

LANGUAGE OF INSTRUCTION: English
PRELIMINARY REQUIREMENTS: Basic skills in Microsoft Windows and MS Office. Basic knowledge of project management. Own laptop.
CONTENTS: 1. Introducing Microsoft Project. 2. Starting a new project. Planning the project. 3. Executing, controlling and closing the project. 4. Creating a model of the project. Working with a team through MS Project. 5. Sequencing and organizing tasks. Understanding Work Breakdown Structure Codes. 6. Accessing and rearranging the project information. Scheduling tasks. 7. Viewing project information. Scheduling tasks. Setting up resources in the project. 8. Assigning resources to the tasks. Planning resource and tasks costs. 9. Checking and adjusting the project plan. 10. Tracking progress. Setting a baseline and updating progress. 11. Responding to changes in the project. 12. Reporting and analysing project information.
EFFECTS OF EDUCATION PROCESS: The acquisition of practical skills in project management according to EPM method. Understanding the concepts and formal project management methodologies. Providing knowledge on effective methods within the following areas: planning and implementation of the project, team building, human resources management, risk management, scheduling and project planning, change management and project tracking, closing the project.
TEACHING METHODS: Workshops, lectures, laboratory.
ASSESSMENT METHODS: Project to pass.
TEACHER: Grzegorz Kłosowski, Ph.D., Eng.; Monika Kulisz, Ph.D., Eng.

**ERGONOMICS - Z11**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, LABORATORY
NUMBER OF HOURS: 30 (15 LECTURE + 15 LABORATORY)	ECTS: 6
SEMESTER: SUMMER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: None	
CONTENTS: An introduction to ergonomics, skeletal system, muscular system and work, engineering anthropometry, biomechanical bases of ergonomics, work physiology, cumulative trauma disorders (ctds), manual materials handling (mmh), workstation design, work-tool design: human-machine systems, light and vision, occupational vibration, shift work, office ergonomics, ergonomics assessment of the workplace, implementation of ergonomics program.	
EFFECTS OF EDUCATION PROCESS: Upon successful completion of this course, student will: Be able to describe an expanded view of ergonomics, which encompasses more than ergonomically related injuries but all parts of assuring that the workplace fits the worker; Be able to put ergonomic assessments and solutions to practical use in the workplace; Will be capable of initiating evaluations of ergonomic issues and working with an ergonomist.	
LITERATURE (OPTIONAL): <ul style="list-style-type: none">• Kroemer, K.H.E., Grandjean, E.: <i>Fitting the Task to the Human</i>, Philadelphia: Taylor and Francis, 5th Edition, 1997, ISBN: 074840665.• Di Nardi S.: <i>The Occupational Environment 3rd Ed.</i>, AIHA Press, 2012, ISBN-10: 1931504431.	
TEACHING METHODS: Multimedia supported Lecture + Lab exc.	
ASSESSMENT METHODS: Test	
TEACHER: Krzysztof J. Czarnocki, Ph.D., D.Sc. Eng. Professor at LUT; Elżbieta Czarnocka, Ph.D.	

**FINANCIAL ANALYSIS - Z13**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, CLASS
NUMBER OF HOURS: 30 (15 LECTURE + 15 CLASS)	ECTS: 5
SEMESTER: WINTER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Basics of accounting, basics of financial statements.	
CONTENTS: Financial statement as a source of information about company's financial standing. Horizontal and vertical balance sheet analysis. Calculation of company's financial risk and financial liquidity ratios. Analysis of profit and loss account. Evaluation of company's productivity. Estimation of profitability ratios. Cash flow statement analysis. Market indicators calculation.	
EFFECTS OF EDUCATION PROCESS: To give the skills in proper reading of financial statements, to prepare students to calculate financial ratios, to realize the importance of using financial ratios in decision making processes	
LITERATURE: <ul style="list-style-type: none">• Harrison W. T. Jr., Horngren Ch. T., Thomas C. W., Suwardy T., <i>Financial Accounting. International Financial Reporting Standards</i>, Pearson Education South Asia Pte Ltd, Singapore, 2011.• Revsine L., Collins D., Johnson W. B.: <i>Financial Reporting and Analysis</i>, Prentice Hall, Apper Sadle River, New Jersey, 2008.• Alehander D., Britton A., Jorissen A.: <i>International financial reporting and analysis</i>, South-Western Cengage Learning, Hampshire, 2009.	
TEACHING METHODS: Multimedia presentation, tasks, cases, discussions.	
ASSESSMENT METHODS: Case study - estimation of company's financial standing. Final exam.	
TEACHER: Artur Paździor, Ph.D., D.Sc. Eng. Professor at LUT	

**FUNDAMENTALS OF MARKETING - Z15**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE (SEMINAR)
NUMBER OF HOURS: 15	ECTS: 5
SEMESTER: WINTER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Intermediate level of English. The course starts two weeks after the beginning of a semester. All students willing to participate in the class are required to contact the teacher, personally or via email, before that date, otherwise they will not be allowed to enrol on a course.	
CONTENTS: Introduction to marketing - the idea of marketing, definitions of marketing, the role of marketing in a modern company. Marketing micro- and macro-environment, consumer behaviour – stages of buying process and their characteristics; key factors involved in and influencing consumer buying process (social, personal, psychological); impulsive buying, satisfaction and its sources. Marketing strategy - market segmentation, product positioning, sources of competitive advantage, building value and relationship with customers. Product and brand – the role of brands, brands equity, brand strategies and positioning, product, its levels and life-cycle. Price, pricing strategies and programs – different pricing strategies, consumers' perception of the price, adapting the price. Marketing communication – the idea and the role of communicating values, marketing communication mix, mass and personal communications. Delivering value – marketing channels and their design, direct marketing.	
EFFECTS OF EDUCATION PROCESS: The main aim of the Fundamentals of Marketing course is to familiarize students with main, basic concepts of marketing management. Attendees will gain knowledge of the role of marketing in a modern company, understanding of the idea of product value and the relation between company and its customers. Students will gain the ability to use different marketing tools in order to create aforementioned value as well as to communicate and deliver it to the market.	
LITERATURE: <ul style="list-style-type: none">• Kotler Ph., Keller K.L., <i>Marketing management</i>.• Hollensen S., <i>Marketing Management: A Relationship Approach. Second Edition</i>, Prentice Hall, 2010.• Egan J., <i>Relationship Marketing: Exploring Relational Strategies in Marketing</i>.• Wood M. B., <i>The marketing plan handbook</i>.	
TEACHING METHODS: Seminar, interactive presentations, discussion.	
ASSESSMENT METHODS: Written exam.	
TEACHER: Marcin Gąsior, Ph.D., D.Sc. Eng. Professor at LUT	

**INDUSTRY 4.0 - Z39**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURES, PROJECT
NUMBER OF HOURS: 30 (10 LECTURES +20 PROJECT)	ECTS: 4
SEMESTER: WINTER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Basic knowledge of mathematics and computer science, Basics of managing a production or service enterprise	
CONTENTS: 1. Basic concepts, introduction to Industry 4.0. 2. Construction of Industry 4.0 systems and processes. 3. Infrastructure of intelligent factory systems - types and examples of applications. 4. Collection and processing of data from devices. Data flow in Industry 4.0 systems. 5. Communication in Industry 4.0 systems. Integration of industrial equipment and ICT systems. 6. Industry 4.0 systems and their integration with the Internet. Data processing in an intelligent factory. 7. Data organization, data stream processing, intelligent control algorithms. 8. Integration of the Internet of Things, cyber-physical systems. 9. Applications supporting Industry 4.0 systems: virtual and augmented reality. 10. The role of technology, infrastructure and digitization as pillars of Industry 4.0.	
EFFECTS OF EDUCATION PROCESS: Knowledge of concepts and formal methods useful in describing and modelling the internal systems and processes of an intelligent factory. Knowledge of effective methods used in enterprises operating in the Industry 4.0 model. Acquiring practical skills in modelling and designing processes in intelligent factories of the future.	
LITERATURE: <ul style="list-style-type: none">• Schwab K., <i>The Fourth Industrial Revolution</i>, Currency; Illustrated edition (January 3, 2017).• Dominik T. Matt D., Modrák V., Zsifkovits H., <i>Industry 4.0 for SMEs Challenges, Opportunities and Requirements</i>, Palgrave Macmillan, 2020.• Ustundag A., Cevikcan E., <i>Industry 4.0: Managing The Digital Transformation Springer Series in Advanced Manufacturing</i>, Springer 2018.	
TEACHING METHODS: Lectures and project	
ASSESSMENT METHODS: Presence, evaluation of submitted project.	
TEACHER: Jakub Pizoń, Ph.D., Eng.	

**INTEGRATED MARKETING COMMUNICATIONS - Z17**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, PROJECT
NUMBER OF HOURS: 30 (15 LECTURE + 15 PROJECT)	ECTS: 5
SEMESTER: SUMMER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	

LANGUAGE OF INSTRUCTION: English
PRELIMINARY REQUIREMENTS: Marketing fundamentals.
CONTENTS: The integrated marketing communication (IMC) process. Managing and coordinating the integrated marketing communication process. Identifying the target audience. Determining the ICM objectives. Designing the message. Selecting the integrated communication channels (real and virtual) according to the Marketing 4.0 concept. Establishing the total promotion budget. Designing the promotion-mix. Measuring the promotion results.
EFFECTS OF EDUCATION PROCESS: Familiarizing students with concepts of integrated marketing communication in contemporary organizations, businesses and institutions. Students will gain knowledge on the process of planning, implementation and control the integrated marketing communication campaigns, and also abilities to prepare creative promotion campaigns in the practice.
LITERATURE: <ul style="list-style-type: none">• Clow K.E., Baack D., <i>Integrated advertising, promotion, and marketing communications</i>. Harlow [etc.]: Pearson, 2016. LUT Library – sygn. : 659/183658• Fill Ch., Turnbull S., <i>Marketing communications: discovery, creation and conversations</i>. Harlow [etc.]: Pearson, 2016. LUT Library – sygn. : 339.138/183657• Fill Ch., <i>Marketing Communications: brands, experiences and participation</i>, 6/E, ISBN-10: 0273770543, ISBN-13: 9780273770541, Pearson, 2013.• Kotler Ph., Kartajaya H., Setiawan I., <i>Marketing 4.0: Moving From Traditional to Digital</i>, ISBN: 978-1-119-34120-8, Wiley, 2016.• Kotler Ph., Keller K.L., Brady M., Goldman M., <i>Marketing Management</i>, 3rd edition, Pearson, 2016. Part 5 and pages 779-781.• Ouwersloot H., Duncan T., <i>Integrated Marketing Communications. European edition</i>. ISBN 978-0-0771-1120-5, McGraw-Hill Higher Education, 2008.
TEACHING METHODS: Lecture with interactive presentations, case studies.
ASSESSMENT METHODS: Written exam, evaluation of submitted and presented projects.
TEACHER: Barbara Szymoniuk, Ph.D., D.Sc. Eng. Professor at LUT

**INTRODUCTION TO INTERNATIONAL BUSINESS - Z18**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, LABORATORY
NUMBER OF HOURS: 30 (10 LECTURE + 20 LABORATORY)	ECTS: 4
SEMESTER: SUMMER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Basics of management.	
CONTENTS: The course provides a fundamental knowledge of the varied aspects of business and prepares students for future studies in more specialized topics within international business area. Students will increase their awareness of the cultural, legal, financial and ethical environment and function of business as well as observe its contribution to society. This course also covers Political, Economic, Cultural, Legal Environments of International Business, and International Human Resource Management in the workplace. This course is designed to provide the student with a working knowledge of the fundamentals business functions, roles, and processes, of with special regard to international business.	
EFFECTS OF EDUCATION PROCESS: Knowledge: Student: knows the place of business in society; describes how business is organized in different environments: cultural, political, legal and ethical; identify and interpret basic cultural, legal, political and economic processes in surrounding world; understands the risks linked with operating in different environments; knows and understands the marketing objectives and tools. Skills: is able to looking for information on business environment al risks and limitations and knows the ways to eliminate them using different sources of data; critically analyses the gathered information. Social competences: is prepared to ethical conduct and behaviour in the frame of organizational and social roles; shows that knows how to improve the knowledge and skills; knows to use and develop cultural intelligence in business.	
LITERATURE: <ul style="list-style-type: none">• Lewis K., Housden M., <i>An Introduction to International Marketing: A Guide to Going Global</i>, Kogan Page, 1998.• El Kahal S., <i>Introduction to International Business</i>. London, 1995.• Crawley E., Swailes S. & Walsh D., <i>Introduction to International Human Resource Management</i>, Oxford, 2013.	
TEACHING METHODS: Individual assessment of student work (preparation of written work, class participation, problem solving knowledge in the course of knowledge verification)	
ASSESSMENT METHODS: class preparation 50%, final project 50%	
TEACHER: Barbara Mazur, Ph.D., D.Sc. Professor at LUT	

**FINANCIAL ACCOUNTING AND REPORTING - Z21**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, CLASS
NUMBER OF HOURS: 30 (15 LECTURE + 15 CLASS)	ECTS: 5
SEMESTER: WINTER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Basics of accounting, basic knowledge of financial statements, basic knowledge of financial analysis	
CONTENTS: The essence, goals and functions of accounting. Accounting information system. Accounting concepts and principles. The essence and methods of asset depreciation. Preparation of financial statements (balance sheet, income statement, cash flow statement, changes in equity statement, supplementary information).	
EFFECTS OF EDUCATION PROCESS: To give the skills in proper creating and reading financial statements. To prepare students to evaluate internal financial information and how to create the useful information for external stakeholders.	
LITERATURE: <ul style="list-style-type: none">• Gierusz B., <i>Podręcznik do samodzielnej nauki księgowania</i>, ODDK, Gdańsk, 2018.• Franklin M., Graybeal P., Cooper D., <i>Principles of Accounting</i>, (openstax.org), 2019.• Ittelson T.R., <i>Financial Statement Career Press</i>, Frankiln Lakes, NJ, 2009.• Ustawa z dnia 29 września 1994 r. o rachunkowości (Dz.U. 1994 Nr 121 poz. 591 ze zm.).• <i>Międzynarodowe Standardy Rachunkowości i Sprawozdawczości Finansowej</i>	
TEACHING METHODS: Multimedia presentation, tasks, cases, discussions.	
ASSESSMENT METHODS: Written test and practical homework. Final exam.	
TEACHER: Artur Paździor, Ph.D., D.Sc. Eng. Professor at LUT	

**MARKETING RESEARCH - Z23**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, CLASS
NUMBER OF HOURS: 30 (15 LECTURE +15 CLASS)	ECTS: 5
SEMESTER: SUMMER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	

LANGUAGE OF INSTRUCTION: English

PRELIMINARY REQUIREMENTS: Participants should have basic knowledge of marketing and statistics and intermediate level of English. The course starts two weeks after the beginning of a semester. All students willing to participate in the class are required to contact the teacher, personally or via email, before that date, otherwise they will not be allowed to enrol on a course.

CONTENTS: Introduction to marketing research, its role in modern marketing management. Planning and evaluating the research process. Exploratory and explanatory, experimental and non-experimental approaches. Sampling: identifying the target population, determining the size of the sample, probability and non-probability sampling techniques and their characteristics. Different qualitative and quantitative data collection methods, their advantages and shortcomings. Measurement: questionnaires, scales and scaling techniques, constructing appropriate questions. Basic concepts of data analysis, interpretation and visualization. Research reports. Marketing research ethics.

EFFECTS OF EDUCATION PROCESS: The main aim of the Marketing Research course is to familiarize students with fundamental concepts of planning and conducting marketing research projects. Attendees will gain in-depth knowledge of different sampling and measurement approaches as well as data collection, analysis and presentation methods and techniques. Upon completion of the course, students should be able to design and carry out market and consumer research in real business environment.

LITERATURE:

- Babbie E., *The Practice of Social Research*, Wadsworth Publishing.
- Churchill G.A., *Marketing Research: Methodological Foundations*, South Western College Pub.
- Zikmund, W.G., Babin B.J., *Exploring marketing research*, Cengage Learning Services; South Western College.

TEACHING METHODS: Lecture, interactive presentations, discussion, case studies.

ASSESSMENT METHODS: Written exam and completion of three case studies.

TEACHER: Marcin Gąsior, Ph.D., D.Sc. Eng. Professor at LUT

**MATHEMATICS - Z24**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE AND CLASSES
NUMBER OF HOURS: 30 (15 LECTURE+ 15 CLASSES)	ECTS: 6
SEMESTER: SUMMER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Basic knowledge of arithmetic, understanding the symbolic notation in mathematics.	
CONTENTS: PART 1 - CALCULUS: 1.Types of numerical sets. Real functions of one variable. Types of the most commonly used functions. Geometric representations of functions -graphs 2. Limits and continuity. Differentiability. 3. Calculating derivatives. Derivatives of composite functions - rule of the chain. Inverse functions and their derivatives. 4. Connection of derivatives with monotonous functions/extrema. 5. Examples of using functions in economics. Specific issues related to economical usage: defining functions by a verbal description/a table of values, rounding arguments and values. 6. Real functions of two variables - limits and continuity, differentiability: partial derivatives and directional differentials. Rule of the chain. Graphs of two-variable functions: curve levels, saddle points 7. Integral Calculus. Anti-derivatives (indefinite integrals), Riemann integral (definite integral). Interpretation and applications. PART 2 - LINEAR ALGEBRA: 1. Notions of matrices, algebra of matrices, special types of matrices 2. Systems of linear equations, invertible matrices; solving systems of linear equations using the matrix inverse. 3. Determinants - properties, applications of the determinant theory. 4. Vector spaces: definition and properties, linear dependence and independence; vector subspaces 5. Linear map (linear transformation): definitions and properties, transformation of a linear array of vector spaces of finite size. Application of linear algebra 6. Inner (dot) and outer product: definitions and properties, orthogonal base.	
EFFECTS OF EDUCATION PROCESS: Basic knowledge of calculus of one- and two-variable functions including defining functions, graphs, limits, continuity, differentiability, monotonicity, extremes, integrals as well as some economical applications. Knowledge of basic notions and properties of linear algebra including matrix and vector operations, solving systems of linear equations, linear transformations and some economical applications.	
LITERATURE: <ul style="list-style-type: none">• Greenspan H. P., Benney D. J., <i>Calculus: An Introduction to Applied Mathematics</i>, Breukelen Press, 1997 (http://books.google.pl/books?id=E-_4PCIE-EC)• Anton H.: <i>Calculus with Analytic Geometry</i>, 6th Edition, Wiley, New York, 1999.• Bowen, Ray M.; Wang, C. C. <i>Introduction to vectors and tensors, Vol. 1: linear and multilinear algebra</i> (http://txspace.tamu.edu/handle/1969.1/2502)	
TEACHING METHODS: Lecture, classes, additional materials for self-learning on www.	
ASSESSMENTS METHODS: A written exam which will check the knowledge of the most essential definitions and theorems as well as the ability of solving simple problems of calculus and matrix/vector calculations.	
TEACHER: Przemysław Kowalik, Ph. D.	

**MICROECONOMICS - Z25**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURES
NUMBER OF HOURS: 15	ECTS: 6
SEMESTER: SUMMER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Mathematics - Knowledge of basic functional dependencies; The ability of logical and creative thinking. Students can work in a team, has instilled habits of lifelong learning and are prepared to analyse practical examples.	
CONTENTS: 1. Introduction to economics, the basic concepts, tools of economic analysis. 2. Supply and demand and their determinants, the market mechanism, market equilibrium. 3. Types and significance of factors elasticity of the demand and the supply. 4. Assumptions of the theory of consumer choice, the factors determining the choice of the consumer. 5. The concept of indifference curves and maps, diversity of consumer preferences, the utility and the marginal rate of substitution. Optimum consumers in both static and dynamic. 6. Economic profit in the company. The production function, the marginal productivity and average productivity. 7. Types of production costs, production costs in the short and long term. 8. Maximizing profit in the company, the company's decisions on output in the short and long term. The choice of the optimal manufacturing techniques. 9. Market structures.	
EFFECTS OF EDUCATION PROCESS: Student is able to define basic economic concepts (demand, supply, market, product, price, money); student is able to explain the market mechanism and the factors that affect the market equilibrium; will be able to describe the main categories of costs in the company from an economic point of view, considered in short and long term; will be able to analyse economic data at a basic level; will be able to calculate the economic profit in the company in terms of its maximization; will be able to assess the company production policy; will be able to explain consumer behaviour related to his income and preferences.	
LITERATURE: <ul style="list-style-type: none">• <i>Couttis D., Irvine I., Begg D., Microeconomics, McGraw-Hill Ryerson, 2010.</i>• <i>Begg D., Fischer S., Dornbusch R., Mikroekonomia, PWE, Warszawa, 2007.</i>• <i>Samuelson P.A., Nordhaus W.D., Economics, McGraw-Hill, New York, 2009.</i>	
TEACHING METHODS: Lectures and multimedia presentations, discussions, exercises.	
ASSESSMENT METHODS: Oral exam.	
TEACHER: Tomasz Żminda, Ph. D., Eng.	



OCCUPATIONAL ENVIRONMENT - Z26

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, LABORATORY
NUMBER OF HOURS: 30 (10 LECTURE + 20 LABORATORY)	ECTS: 4
SEMESTER: WINTER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: None	
CONTENTS: Introduction, History of Occupational Health. Occupational Health Law and Regulations. Industrial Hygiene and Control of Exposures, Calculations and Occupational Exposure Limits. Short Term Exposure Limits, Additive effects, Models of exposure. Pre Inspection Research, Initial Walk Through, Basic Elements: Qualitative IH Survey, Quantitative IH Survey. Industrial Hygiene Control, Dilution Ventilation, Air Cleaning Systems. Occupational Illnesses, Microbiological factors in occupational environment. Personal Protective Equipment. Noise: Measurement, Health Impact; Hearing Conservation Amendment, Controlling noise levels. Ergonomics. Non-ionizing radiation, Heat stress. Occupational Health Around the World, Industrial Hygiene: Professional Ethics. Ionizing Radiation, Health Impact; Controlling radiation levels. Vibration, Measurement, Health Impact; Controlling shock levels. Implementation of Occupational environment management systems.	
EFFECTS OF EDUCATION PROCESS: Upon successful completion of this course, student will: be able to conduct basic industrial hygiene calculations (concentration, time-weighted average, ventilation and noise); list common diseases related to the work and the workplace; discuss occupational health in a world-wide context; understand the implications of ethics (The Canons of Industrial Hygiene Practice) in the practice of environmental and occupational health; discuss how regulations affect the practice of industrial hygiene.	
LITERATURE: <ul style="list-style-type: none">• Kroemer, K.H.E., Grandjean, E.: <i>Fitting the Task to the Human</i>, Philadelphia: Taylor and Francis, 5th Edition, 1997, ISBN: 074840665.• Di Nardi S.: <i>The Occupational Environment</i> 3rd Ed., AIHA Press, 2012, ISBN-10: 1931504431.• <i>Applications and Computational Elements of Industrial Hygiene</i> CRC Press, Martin B. Stern and S.Z. Mansdorf, Editors, 1999.	
TEACHING METHODS: Case analysis + Lab exercises.	
ASSESSMENT METHODS: Qa Prior the Lab Exc	
TEACHER: Krzysztof J. Czarnocki, Ph.D., D.Sc. Eng. Professor at LUT; Elżbieta Czarnocka, Ph.D.	



OCCUPATIONAL HEALTH RISK ASSESSMENT - Z27

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE/SEMINAR
NUMBER OF HOURS: 15	ECTS: 4
SEMESTER: SUMMER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: None	
CONTENTS: 1. Health hazards in the workplace; 2. Physical injury • Musculoskeletal disorders • Noise-induced hearing loss • Hand arm vibration syndrome • Skin cancer • Effects from both ionizing and non-ionizing radiation e.g. cataracts • Heat exhaustion, hypothermia and various other health effects Skin disorders (burns, contact dermatitis, cancer) • Irritant contact dermatitis • Allergic contact dermatitis • Intoxication, through to asphyxiation and death • Acute pneumonia. Damage to the respiratory tract • Damage to internal organ systems. Acute health effects. Chronic health effects. Long latency; 3. Measurement of exposures and characterization of the risk. 4.Reducing exposures 5.Assessing exposure levels; 6. Risk management process and analysis: (1) identification of exposures, hazards; (2) assessment of alternatives, use of forecasting and modelling, spread of risk, diversification; 7. Partnership between occupational health advisors, occupational /industrial hygiene advisors, managers and operational staff.	
EFFECTS OF EDUCATION PROCESS: Practice in collaboration with other disciplines within the field of occupational health. Evaluate the industrial environment, including industrial processes, hazards, labour issues, and corporate structure in the context of worker health and safety; Analyse examples of workplace and other environmental exposures in the context of regulations, laws, and policies. Formulate a program and a feasible implementation plan to control occupational health hazards. Recommend risk management approaches, including regulatory, engineering, and behavioural/risk communication options. Assess the effectiveness of interventions that have been instituted to modify risks associated with workplace and other environmental hazards.	
LITERATURE: <ul style="list-style-type: none">• <i>Haimes Y.Y., Risk Modeling, Assessment, and Management 2nd Edition ISBN: 978-0- 471-72389-9 2010.</i>• <i>Reese Ch.D., Occupational Health and safety management. A practical approach 2nd edition CRC Press Taylor & Francis Group, 2009.</i>• <i>Gallwey T.J., O'Sullivan L.W., Ergonomics laboratory exercises CRC Press 2009.</i>	
TEACHING METHODS: Multimedia supported Lecture + case analysis	
ASSESSMENT METHODS: Assessment will be done with a portfolio technique, which includes a mixture of challenges such as assignments, filled-out checklists, reports (e.g. workplace evaluations) and some tests.	
TEACHER: Elzbieta Czarnocka, Ph.D.	



OCCUPATIONAL STRESS - Z28

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, SEMINAR
NUMBER OF HOURS: 30 (10 LECTURES + 20 SEMINARS)	ECTS: 4
SEMESTER: WINTER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: English level B2. Basic knowledge of the work and organization psychology and sociology	
CONTENTS: Stress: concept and conceptions (biological, medical and psychological). Stress as a pathogenic mechanism and a social problem. The work addiction as the organizational stress effect. Occupational stress and organizational stress processes. Certain job stress theories. Psychosocial sources of job stress (physical environment, chronobiological factors and social environment). Stress sources analysis at different workplaces. Stress in the context of organizational culture and scientific - technical civilization development. Responses to stress at physiological, psychological and organizational level. Effects and costs of the workplace stress - individual and organizational perspective. Burnout as the effect of excessive load stress. Occupational stress and individual differences (temperament, locus of control, the sense of coherence). Certain methods and tools of the stress assessment at workplace. Stress coping methods at individual and organizational level. Stress audit at working environment. Stress management at the organization. Making plans of the occupational stress prevention at individual and organizational level.	
EFFECTS OF EDUCATION PROCESS: The main aim of the Occupational Stress course is to acquire the skills of recognizing, appraising and managing stress at the work environment. Occupational stress knowledge presented during the course concentrate on recognizing occupational and personal stress at individual and organizational level. Participants acquire such competences as: diagnose stress level, coping with stress, making the stress management programs, prevention plans and to manage them.	
LITERATURE: <ul style="list-style-type: none">• Biron C., Cooper C.L., Burke R. J. : <i>Creating Healthy Workplaces: Stress Reduction, Improved Well-being and Organizational Effectiveness</i>. Routledge, Farnham 2014. eBook• Dewe P., Leiter M.P., Cox T.: <i>Coping, Health, and Organizations</i>. CRC Press, London, 2000. eBook• Gordon S.G.: <i>Toward Wellness: prevention, Coping and Stress</i>. Information Age Publishing, Charlotte, N.C., 2003. eBook• Mustafa A.: <i>Organizational Behaviour</i>. Edition: 2nd ed. Global Professional Publishing Ltd., London, 2013. eBook. (Chapter 8: Stress Management)• Perrewe P.L., Quick J.C., Rossi A.M.: <i>Stress and Quality of Working Life: The Positive and the Negative</i>. Information Age Publishing: Charlotte, N.C., 2009. eBook• Pestonjee D. M., Pandey S.C.: <i>Stress and Work: perspectives on Understanding and Managing Stress</i>. New Delhi: Sage Publications Pvt. Ltd., 2013. eBook Complementary: <ul style="list-style-type: none">• Anderson N. : <i>Handbook of Industrial, Work & Organizational Psychology: Volume 2: Organizational Psychology</i>. SAGE Publications Ltd., London, 2001. eBook• Melnick S.: <i>Success under stress: Powerful Tools for Staying Calm, Confidential, and Productive When the Pressure's On</i>. AMACOM. : New York, 2013. eBook.	
TEACHING METHODS: Lectures, discussion, case study, working in groups, workshops.	
ASSESSMENT METHODS: Written test, project execution and its presentation, presence and active participation in seminar discussion and exercises.	
TEACHER: Krystyna Wojciechowska, Ph.D., Eng.	

**OPERATIONAL RESEARCH IN MANAGEMENT - Z29**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, LABORATORIES
NUMBER OF HOURS: 45 (15 LECTURE + 30 LABORATORIES)	ECTS: 3
SEMESTER: SUMMER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	

LANGUAGE OF INSTRUCTION: English
PRELIMINARY REQUIREMENTS: Knowledge of the matrix notation of systems of equations, operations on matrices, basics of probability theory and spreadsheet usage.
CONTENTS: 1. Operational Research - introduction: history and scope. 2. Introduction to linear programming (LP): assumptions, basic properties, solving LP problem, multiple optimal solutions, limitations of usage. 3. Practical applications of LP: product-mix problem, diet/blending problems. 4. Integer linear programming (ILP): cutting-stock problem, packing problems, knapsack problem, special issues connected with cutting/packing problems, job/task scheduling. 5. Mixed integer linear programming (MILP) - dealing with discontinuities in models. 6. Network optimization problems: transportation problem and its extensions, assignment problems, minimal flow cost, shortest path, maximal flow, travelling salesman problem (TSP), minimal spanning tree problem. 7. Non-linear programming (NLP): assumptions, basic properties, specific issues: global vs local extrema, limitations of algorithms. Examples of applications of non-linear programming. 8. Advanced application of operational research: multi-criteria optimization, dynamic programming, decision trees, decision games, mass service systems, basic inventory models.
EFFECTS OF EDUCATION PROCESS: Knowledge of terminology and methodology of operational research, the language of quantitative methods used to express goals of the organization as decision optimization problems, usage of IT tools (especially spreadsheets) used in optimization, issues connected with computer-based optimization.
LITERATURE: <ul style="list-style-type: none">• Hillier F.S., Lieberman G.J.: <i>Introduction to Operations Research, 8th Edition</i>, McGraw Hill, 2005.• Ragsdale C.T.: <i>Spreadsheet Modelling and Decision Analysis: A Practical Introduction to Management Science</i>, South-Western College Publishing, 2007.• <i>Excel Solver Tutorial for Optimization Users</i>, http://www.solver.com/tutorial.htm.
TEACHING METHODS: Lecture and computer laboratories (Microsoft Excel or WPS Spreadsheets, also other optimization software (both with usage of LCD projector), paper "hand-out" educational materials for laboratories, additional materials in pdf and xlsx formats for self-learning available on the website.
ASSESSMENTS METHODS: Lecture: an examination in written form which will check the understanding of basic definitions and theorems of operational research. Laboratories: a test checking the ability of solving some types of optimization problems: creating mathematical model and obtaining an optimal solution by using selected optimization software (spreadsheet-based like Microsoft Excel/WPS Spreadsheets).
TEACHER: Przemysław Kowalik, Ph.D.

**POLITICAL& GLOBAL ECONOMICS - Z30**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURES /SEMINAR
NUMBER OF HOURS: 15	ECTS: 5
SEMESTER: SUMMER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: English level B2	
CONTENTS: 1. Economic situation and condition. Globalisation. 2. Rules of market (at the micro and macro levels). 3. Determinants and models of economic development. 4. Main macroeconomic trends in labour market. 5. Main macroeconomic trends in inflation. 6. Effects of Foreign Direct Investments in economy. 7. Balance of economy. 8. Fundamentals of monetary policy. 9. Distribution of goods and services in economy. 10. Influence of the government on the condition of the economy. 11. Polish minority government characteristic. 12. Basic economic problems of Polish economy. 13. Basic economic problems of global economy. 14. Economic data research and presentation.	
EFFECTS OF EDUCATION PROCESS: Introduction of the students to principles essential to understanding economizing problem, principles of economic methodology, specific economic issues, and the policy alternatives.	
LITERATURE: <ul style="list-style-type: none">• Hare P., Turley G., <i>Handbook of the Economics and political economy of transition</i>, Routledge, London 2019.• McConell C.R.; Brue S.L.: <i>Economics</i>, McGraw-Hill Irwin, 2005.• Rzepka A.: <i>Globalisation and global economy in the theory and practise</i>. Lab Lambert, Saarbrucken 2013.• Persson T., Tabellini G.: <i>Political Economics. Explaining Economic Policy</i>, The MIT Press, 2002.• Begg D., Fischer S., Dornbusch R.: <i>Economics</i>, 6th ed., Mcgraw Hill, 2000.• Stiglitz J.E.: <i>Economics of the Public Sector</i>, Norton&Co, New York-London, 2000.	
TEACHING METHODS: Multimedia presentations, discussion, working in groups.	
ASSESSMENT METHODS: Participation in the classes, essay, evaluation of presentations	
TEACHER: Prof. Ewa Bojar, Ph.D., DSc / Agnieszka Rzepka, Ph.D., D.Sc., Professor at LUT	

**PRODUCTION PLANNING AND MANAGEMENT - Z31**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURES, PROJECT
NUMBER OF HOURS: 30 (10 LECTURES +20 PROJECT)	ECTS: 5
SEMESTER: WINTER	CLASS LEVEL: FIRST CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Own computer with application Excel, good knowledge of Excel.	
CONTENTS: 1. Operations Management. 1. Operations Management. Operating strategy 2. Design and development of new products. Selection and process design and technology 3. Long-term planning of capacity and location of facilities. Quality Management 4. Planning for medium and short term. Selected methods of manufacturing flow management (Systems Just in Time, Kanban) 6. Project: Model of the product in the market	
EFFECTS OF EDUCATION PROCESS: To know the strategies included within the concept of Organization and Production Management. Business activities they collect. Know how to approach, evaluate and select the most appropriate operational strategies in each case, identify weaknesses and propose improvements.	
LITERATURE: <ul style="list-style-type: none">• <i>Stevenson, W.J. Production / Operations management. Irwin 2010.</i>• <i>Stoner, J., Freeman, R., Management. Prentice-Hall 2002.</i>• <i>Walters, D., Inventory control and management. John Wiley & Sons, Chichestr 2012.</i>• <i>Koren, Y., The global manufacturing revolution. Product-Process-Business Integration and reconfigurable manufacturing systems. Wiley, New Jersey 2010.</i>• <i>Pepall, L., Contemporary industrial organization: a quantitative approach. Handbook. John Wiley & Sons, Chichestr 2011.</i>• <i>David, F.R., Strategic management: concepts, global edition. Pearson, Boston 2011.</i>	
TEACHING METHODS: Lectures and project	
ASSESSMENT METHODS: Project/ Active participating in the classes.	
TEACHER: Jolanta Słoniec, Ph.D., D.Sc. Eng. Professor at LUT	

**STATISTICS IN MANAGEMENT - Z35**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, PRACTICAL/TUTORIALS, LABORATORY
NUMBER OF HOURS: 60 (15 LECTURE+ 15 TUTORIALS + 30LABORATORY)	ECTS: 3
SEMESTER: WINTER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: Basic knowledge of mathematics and statistics I	
CONTENTS: 1. Introduction to probability theory. Discrete random variables. Continuous random variables. Applications of the concept of random variables in management and quality sciences. Basic statistical measures. 2. Estimators and their properties. Estimations: the least mean squares method (LMS), maximum likelihood estimation method (MLE), method of moments (MM). Interval estimation. Confidence interval for mean. Confidence interval for variance. 3. Hypothesis testing. Hypothesis test for a mean, hypothesis test for a variance. 4. Parametric and non-parametric tests for comparing two or more groups. Goodness of fit tests. 5. Correlation test. Regression analysis. 6. Multi-dimensional analysis. 7. Designing statistical experiments. The Monte Carlo Method. 8. Time series.	
EFFECTS OF EDUCATION PROCESS: Identification of phenomena using the tools of mathematical statistics	
LITERATURE: <ul style="list-style-type: none">• Salvatore D., Reagle D., <i>Statistics and econometrics</i>, McGraw-Hill, 2002.• Smith G., <i>Essential Statistics, Regression and Econometrics, for the Social Sciences</i>, Academic Press, Elsevier, 2015.• Stevens J.P., <i>Applied Multivariate Statistics for the Social Sciences</i>, Lawrence Erlbaum Associates Publishers, London, 2002.• Myers J., Well A., <i>Research Design and Statistical Analysis</i>, Lawrence Erlbaum Associates Publishers, London, 2003.• Ross, Sh. M., <i>Introduction to Probability Models</i>, Academic Press, 1997.	
TEACHING METHODS: Lecture, practical/tutorials, laboratory	
ASSESSMENT METHODS: Lecture: oral examination. Laboratories: a test checking the ability of solving some tasks.	
TEACHER: Edward Kozłowski, Ph.D., D.Sc., Professor at LUT	

**STOCK MARKET INVESTMENTS - Z36**

FACULTY OF MANAGEMENT	CLASS TYPE: LECTURE, CLASS
NUMBER OF HOURS: 30 (15 LECTURE+ 15 CLASS)	ECTS: 4
SEMESTER: SUMMER	CLASS LEVEL: SECOND CYCLE
MINIMAL NUMBER OF STUDENTS: 12 (Should the number of applying students be smaller, the course may be cancelled)	
LANGUAGE OF INSTRUCTION: English	
PRELIMINARY REQUIREMENTS: basic knowledge of financial statements and financial analysis, basic knowledge of financial mathematics and macroeconomics.	
CONTENTS: Short brief of stock market history. Fundamental analysis, technical analysis and behaviour analysis – main differences. Main tools of technical analysis. Trend lines, resistant and supporting lines, etc. Linear formations. Candlestick formations. Fibonacci numbers and Elliot wave theory. Short brief of stock market history. Fundamental analysis, technical analysis and behaviour analysis – main differences.	
EFFECTS OF EDUCATION PROCESS: To give the skills in investing on a stock market. To prepare to find proper line and candlestick formation. To realize the importance of reducing investment risk. To show the ways and results of many types of investing.	
LITERATURE: <ul style="list-style-type: none">• <i>Mishkin F.S., Eakins S.G.: Financial Markets and Institutions, Pearson education Limited, Edinburgh, 2012.</i>• <i>Murphy J.J.: Technical Analysis of the Financial Markets, New York Institute of Finance, 1999.</i>• <i>Graham B.: The intelligent Investor, Library of Congress Cataloging-in-Publication Data 2003.</i>	
TEACHING METHODS: Multimedia presentation, tasks, cases, discussions.	
ASSESSMENT METHODS: Written test and practical task. Presentation.	
TEACHER: Artur Paździor, Ph.D., D.Sc. Eng. Professor at LUT	